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ON

THE CEREBRAL INVASION OF PATHOGENIC AND PYOGENIC ORGANISMS

AND ON

THE CHOICE OF LIGATURES.

Delivered at the Annual Meeting of the British Medical Association at Oxford on July 28th, 1904.

BY SIR WILLIAM MACEWEN, M.D. GLASG., F.R.S.,

REGIUS PROFESSOR OF SURGERY IN THE UNIVERSITY OF GLASGOW.

MR. PRESIDENT AND GENTLEMEN,—Several points concerning cerebral invasion of pathogenic and pyogenic organisms have previously been brought to the notice of the profession in various communications by me, especially in a work on "Pyogenic Diseases of the Brain and Spinal Cord," published in 1893, and in the inaugural course of Lane lectures given by me in San Francisco in 1896. Subsequent experience, though modifying somewhat, has mainly confirmed and emphasised previous observations.

LOCALISATION OF BRAIN ABSCESS ARISING FROM PRIMARY PYOGENIC CRANIAL LESIONS.

The first point refers to the localisation of brain abscess. Prior to the advent of cerebro-spinal surgery in its later development, abscess of the brain was regarded solely as of a pyæmic nature, occurring by metastasis and, owing to the aberrant manner in which abscess formed, its localisation was regarded as impossible, except in the few instances where abscess happened to occur in parts which gave rise to functional manifestations. Even where abscess occurred as secondary to a primary pyogenic cranial lesion some were inclined to believe that the brain abscess was equally due to a pyæmic manifestation and accordingly could occur at any part of the brain distant from, and without relation to, the primary lesion.

Such was the old view, but early observation showed that this view was untenable. It was seen that all brain abscesses arising from the foci within the cranium were, if not in direct contact with such foci, at least in contact with the infected path which lay between the primary focus and the abscess. Knowing the primary cranial pyogenic focus one could count upon the abscess being situated within a circumscribed radius of that point. Subsequent experience has abundantly confirmed this view and shows that in the great majority of instances in which abscess of the brain has formed from primary foci on the exterior of the skull the brain abscess is situated in direct contiguity with the infected structures. Anatomical features, or the results of prior pathological processes, usually determine the particular direction in which the pyogenic organisms proceed from the primary focus to the brain. If the cerebral abscess remains unrelieved and continues to grow it may by extension implicate other regions of the brain distant from the primary external focus; even then the contiguity of diseased structure is generally traceable. So that, by way of illustration, if one takes intracranial abscess resulting from ear disease, one knows that such abscess will form within a limited area of the middle ear, the particular direction of the extension being determined by the anatomical condition of the parts and the direction of the prior pathological encroachments. The abscess will be found either within the temporo-sphenoidal lobe contiguous with the infected tissue round the sigmoid sinus or in the cerebrum in touch with the infected path from the tegmen antri or tympani, the pathological processes having generally prepared the way and having left in most instances an easily traceable path. This being correct, it must be apparent in a case of abscess of the brain that the preliminary investigation is facilitated and the treatment simplified, as access to the abscess in either position may be had by extension of the aperture already made in the mastoid.

THE DETERMINATION OF ABSCESS VERSUS MENINGITIS.

Anatomical features are often secondary determining factors between abscess and meningitis, and in the latter case between localised and generalised lesions. If the access of the pyogenic organisms has been by way of the tegmen or the sigmoid, abscess of the brain or cerebellum is frequent; and if meningitis results it is at least primarily localised, often the result of a soldering process, does not immediately involve vital structures, and is often amenable to prompt treatment.

ABSCESS DOES NOT OCCUR BY PYOGENIC ORGANISMS TRAVELLING BY WAY OF THE INTERNAL AUDITORY MEATUS.

If, on the other hand, the pyogenic organisms have travelled by way of the internal auditory meatus they occasion leptomeningitis of a serious kind on account of its being basal, early involving the medulla and respiratory centres; and, secondly, on account of its inaccessibility. Abscess of the brain seldom or never occurs by pyogenic organisms travelling by way of the internal auditory meatus. My own personal observation has never shown me a single instance of such an occurrence, nor would it be likely to occur from the anatomical features of the parts. The brain is kept apart from the original pyogenic focus by the whole length of the internal auditory canal, while the expansion of the brain membranes which ensheath the nerves in the canal dip right into it. The leptomeningitis is thus set up in the canal and from there spreads over the basal membranes. Collections of purulent matter are frequently in the meshes of the pia mater and arachnoid and occasionally they produce a softening and ulceration of the brain surface but not abscess of the brain.

TUBERCLE OF THE MIDDLE EAR EXTENDING TO THE BRAIN, THE MEMBRANA TYMPANI REMAINING INTACT.

Tuberculous meningitis has occurred in ten cases seen by me in which the middle ear was involved without perforation of the tympanic membrane and in the majority without swelling over the mastoid. In five the internal auditory meatus was the channel by which the tubercle spread from the middle ear to the membranes covering the cerebellar fossa and the basal ganglia, and these parts were so clearly and extensively involved that no attempt was made by way of operation to follow the disease after removing the primary focus from the middle ear and its adnexa. Those five succumbed to the tuberculous meningitis after various periods, some lingering for months. In five other cases intracranial operations were performed as the meningitis was unilateral and it was hoped to be still localised and to have spread by way of the tegmen. In the first of these that hope was not realised, the disease having spread beyond the possibilities of recovery. In the second the disease had spread toward the base beyond the limits of what was deemed prudent to follow. In this case, though the disease had spread through the tegmen antri and tympani, it had advanced too far and radiated in many directions. The patient improved after the operation and lived in the possession of a fair amount of health, sufficient to enable him to resume work and have a limited enjoyment of life for three years, with two meningeal attacks of short duration in the interval. At the expiry of this time his health markedly declined and he died in a fourth attack of typical basal tuberculous meningitis. In the other three cases which came under observation at an earlier period of the disease the meningitis was confined to the basi-membranes and lateral aspects of the temporo-sphenoidal lobe and were dealt with successfully, the patients not only recovering from the operation but regaining strength and vigour. The mental capacity of one of these has been sufficient to enable him to gain a foremost place in a large public school. Another instance of tuberculous meningitis (the eleventh) originating in a tuberculous lesion in the middle ear without rupture of the membrana tympani occurred in a gentleman who was only seen by me in the advanced stage of the disease, while comatose, and consequently when the usual avenues whereby information may be gleaned from the patient were closed. The only item of history that could be taken as connecting the ear with the disease was the fact that some months previously, while in Algiers, he had taken cold in the head and had complained of slight pain in his right ear, which passed off in a few days without occasioning any discharge through the external ear. When seen by me the membrana tympani was intact but somewhat wash-leather like, and slight wincing was elicited by pressure over the right mastoid region, while like pressure was tolerated over the left mastoid. There was just a possibility of affording relief by operation. The mastoid was found filled with tuberculous granulation tissue

and there was an erosion through the tegmen and the adjacent dura mater filled with tuberculous granulation tissue. From there the meningitis had spread, radiating over the temporo-sphenoidal lobe both laterally and basally and extending beyond the limits of an extensive operation. Temporary relief was afforded but the generalised meningitis became marked, from which the patient died. No doubt in many of these cases the tuberculous meningitis would have been diagnosed, but the connexion between it and the original tuberculous focus in the mastoid might easily have been overlooked, especially as the membrana tympani was still intact. Even on post-mortem examination, when extension to the membranes of the brain has taken place by way of the internal ear or the sigmoid sinus, a casual examination of the interior of the skull might easily overlook the channels of extension and therefore the primary focus might remain undiscovered. Patients affected with tubercle of the middle ear, with rupture of the membrana tympani, are subject to secondary pyogenic invasion which runs a rapid course, the pyogenic organisms finding abundant pabulum for their development.

MILIARY TUBERCULOSIS FROM THE MIDDLE-EAR THROUGH THE SIGMOID SINUS.

Another mode by which tubercle of the mastoid may become a menace to life is by dissemination through the sigmoid sinus to other parts of the body. On many occasions tuberculous masses of granulation tissue issuing from the mastoid have surrounded the knee of the sigmoid sinus and in a number the lumen of the sinus has been invaded by the tuberculous granulation tissue. In one of these tuberculous disseminations occurred in the lungs and afterwards in several epiphyses leading to joint disease. In a case of rapid illness from tubercle resembling an acute infective disease in its rapidity and fatal termination general miliary tuberculosis was found in the lungs and some of the other viscera. Both mastoids were filled with granulation tissue but the right sigmoid sinus was penetrated and the aperture was in direct contact with caseating tubercle.

THE RECOGNITION OF A RESPIRATORY AND CARDIAC REFLEX INDUCED BY PERIPHERAL IMPRESSIONS ON THE PUDIC NERVE.

[The lecturer pointed out a very curious connexion between irritation of the pudic nerve and the respiratory centre, as shown by spasm of the glottis from stretching of the anus.]

THE CHOICE OF SUITABLE MATERIAL FOR LIGATURES AND SUTURES AND THE REQUIREMENTS OF THE LIVING TISSUE RELATIVELY TO THEM.

Ever since Ambroise Paré introduced the ligature for the arrest of hæmorrhage the choice of suitable material for both ligatures and sutures has been the subject of inquiry, and, judging from articles which appear in the medical press, still remains a desideratum. It might be thought *a priori* that this question would have been easily settled by direct experiment. At present most investigators content themselves by aiming at a sterilised material. This, though necessary, is only one of the factors. Nature shows us in blood clot a material which performs its function of temporary occlusion of a vessel and which thereafter is speedily removed, the initial disintegration, commencing within the blood clot itself, greatly facilitating this process. In animal tissues there are cells, one of whose functions is to remove effete products from the economy. Use can be made of those cells to aid us in the disposal of the foreign bodies introduced as sutures or ligatures. In order to do this effectively the physiology of those cells must be studied. The extent of their power relatively to the removal of the material introduced is gauged and the time which they take to effect the purpose is noted. On the other hand, it is essential to determine the period necessary to accomplish union between the various tissues operated on so as to decide the length of time the suture ought to be able to resist the action of the living tissues before permitting itself to be absorbed. Attention is first directed to this question. The object to be obtained by the ligature of a vessel is the occlusion of that vessel by living tissue. This may be attained in various ways; one of the most effective is by making a solution of continuity in the inner coat of the vessel which is attended by rapid regeneration of fixed tissue cells of the parts involved.

The ligature is applied to a vessel so as to rupture at least the internal coat and from the wounded surfaces rapid proliferation ensues, especially as the apposed surfaces on rupture are maintained in close apposition by the ligature and the vitality of the vessel wall is little interfered with. The material used to effect these two purposes—first the rupture of the internal coat of the vessel, secondly the maintenance of the walls of the vessel in contact at the part where the solution of continuity has taken place—is no longer of service after the living organic occlusion of the lumen has been accomplished, and if after that it persist in that position it remains at best as a useless foreign body which the living tissue may exclude by shutting it off by the formation of an avascular connective tissue which encapsules the foreign body and so lessens or altogether prevents its power of doing evil. The constricting force of the ligature, if continuous, may cause absorption of the vessel wall or where the ligature is placed in parts subject to movement it may occasion irritation and be gradually extruded. The aim in choice of a ligature should be to obtain one which would accomplish the first two objects—namely, to produce a solution of continuity of the internal coat of the vessel and to maintain the parts in apposition for a time sufficient to enable the living tissues to accomplish the organic union of the vessel wall; and thirdly, having accomplished these two former objects, to permit itself to be speedily removed from the tissues without disturbance, its place being taken by a new formation of living connective tissue which would further strengthen the occlusion of the vessel at the part ligated. Asepticity is by many considered the sole requirement in a ligature, otherwise mechanically suitable, but asepticity is only one of the requirements. A further requirement which a ligature ought to possess is that it will remain in the tissues for a time sufficient to effect its purpose and which will then be capable of rapid elimination. The same desiderata are required for sutures. A material capable of maintaining the tissues in contact sufficiently strong to enable the tissues to proliferate and to effect a living union of the parts is required, and after this has been accomplished this suture material ought to become eliminated without disturbance of the parts. So that when the mission of the suture has been accomplished it should no longer remain in the tissues a useless dead material capable of producing irritation but should permit itself to be speedily removed.

Some conceive the idea that it would be good to have a material by the aid of which the parts could not only be brought together but one which would maintain them in permanent apposition. Such physical union is readily produced between two inorganic substances, such as two plates of metal, but it cannot be obtained between two pieces of living tissue. Living tissue can only be made to adhere permanently by a living bond of union. A suture of dead tissue can only secure co-aptation of two living surfaces for a limited period—a period sufficient, in the majority of instances, to enable the living tissues to become united. When such union fails to be produced from any reason the living tissue gives way by absorption in front of the pressure exerted by the dead suture. This absorption goes on until there is no more traction by the suture—until a position of rest is obtained when the suture lies loose in the tissues. When this stage has been reached the dead suture is of no further service—it remains at best a useless foreign body which, if encapsulated, may be innocuous; but its presence among tissues subject to movement is often a source of irritation, and sometimes of danger, to the neighbouring parts (as in hernia). It is sometimes extruded from the tissues by a process of molecular disintegration occasionally associated with abscess formation. Some surgeons have introduced a wire suture in the belief that they would be able to bring together and to maintain permanently in apposition the tendinous and aponeurotic structures in inguinal hernia. The futility of this latter hope may be gathered from the following. Five cases in which gold wire was used, which had been operated on by various surgeons, came at a subsequent period of their history under my notice, three for the relief of recurrent herniæ and two for herniæ which had become strangulated. Of the three former the wire in two was found to be loose in the tissues and free from the aponeurosis which it had been introduced to maintain in contact, and therefore its continuation in the tissue was objectless; while the third was imbedded in a granulation mass lying so close to the surface that it was evidently in process of extrusion, having been entirely freed from the structures into which it had been originally introduced. In two cases of strangulation the loop of wire which had originally been introduced through the aponeurosis was found free and hung

loose, and the bowel had passed right through this loop and had become entangled and constricted as if in a tight ring. In one of these cases perforation had already occurred at the point of constriction by the wire. Not only do the soft tissues, muscle, aponeurosis, &c., conform to this rule, but bone is likewise subject to it. In the case of bones, such as the head of the tibia and condyles of the femur, steel pins, introduced for the purpose of immobilising the limb after excision of the knee, are so firmly fixed in the bone immediately after introduction, and for days thereafter, that their removal presents great difficulties, and in order to accomplish this considerable force exerted through the medium of suitable instruments is necessary. These pins, however, become loose from 14 to 21 days thereafter and so free are they at the latter period that they can be easily lifted from their position by the fingers, the bone having become absorbed round the periphery of the pins. A wire suture, introduced into a hole in a bone just suitable to its size, commences about the same period to have a free space formed round its periphery which increases in front of it by absorption until no more pressure is exerted by the wire. Once the wire lies loose the space between the bone and the wire may again be filled with connective tissue.

How long do wounded tissues require to be maintained in contact by adventitious aid before sufficient healing takes place to enable them to do without artificial support? This depends upon the particular tissue involved and upon the conditions under which it is placed at the time. In a healthy subject an extensive aseptic wound of the skin brought into apposition without tension, and upon which there is no traction, from seven to 14 days are generally sufficient as the healing process is then well advanced. No doubt the wound may be superficially cicatrised before that time but union is imperfect, and if the tender cicatrix be subject to traction it would yield. Even when the wound does not open it is liable at that early period to stretch and to leave a broad cicatrix. A cutaneous stitch in such a wound would be required to maintain apposition for a week or ten days. Should there be tension on the part a longer period may be required. In smaller cutaneous wounds or those well supported by neighbouring tissues a shorter time is all that is necessary. In the case of divided muscles, tendons, or aponeurosis, a suture which would maintain them in contact for three weeks is necessary. In 14 days there is considerable union, but it requires other seven days to enable sufficient firmness to be obtained in the cicatrix to enable it to do without the active support of the stitch. After a period of 21 days the continued traction of the suture causes the soft tissues to give way before it, and this goes on until the suture lies loose and functionless in their midst. It must be borne in mind that when union of aponeurosis or other like structures is dependent upon extensive fibrous tissue formation, such fibrous tissue after its formation is liable to stretch for fully six weeks and therefore the parts during that time ought not to be subjected to strain. Fractured or divided bone placed in favourable circumstances heals as readily as aponeurosis, though a longer period is necessary to allow of deposition and fixation of the earthy salts and to accomplish consolidation. Shafts of long bones subject to powerful leverage require longer fixation than shorter ones not subject to such strain. In many cases one would desire that sutures should continue their hold on fracture surfaces for a longer period than four weeks, but at the end of the third week a softening process has begun at the point where the suture has exerted pressure on the bone, and this softening process continues slowly until the bone in front of the pressure is absorbed and the suture lying loose and exerting no further traction on the parts remains there a functionless foreign body. Just how long is required for this loosening process to be accomplished depends upon the bone and the strain that the osseous tissue is subjected to. When the living union of the bone has occurred and the stitch is completely relieved of strain the metallic stitch may then become encapsuled, and if it lies close to the bone or remains entirely within it so as not to prove an obstacle to the free movement of the muscles it may remain innocuous indefinitely, but it no longer holds the bones together. Even in bone one cannot have a stitch which will permanently maintain the fragments in apposition. So that a suture acts in bone in the same way as it acts in the soft parts, only it takes longer in the former to attain a position of rest. The mere presence of a suture in a fracture unless osseous union has occurred, will not prevent the separation of the fragments. In two cases of fractured patella which had been seen by me some years after they had been operated on by others, the one had an extensive fibrous union between the osseous fragments and the bone had freed itself from the wire, which was quite subcutaneous, but was not giving trouble further than irritation. The other fractured patella had healed likewise by fibrous union and the wire was found free from the upper fragment, but was still adherent to the lower fragment of the patella. From the foregoing it must be evident that the material to be used for ligatures and sutures, besides being physically fitted to perform its function, requires to be rendered aseptic, and, further, requires to comply with a physiological test. First, it must remain intact in the tissues until its object be accomplished; and, secondly, after that has been attained it must permit itself to be removed quickly by absorption. Sterilised silk is practically non-absorbable. It resists the action of the tissues for a very long period—years—and is frequently extruded. Silkworm gut and hair are proof against absorption and have been removed from the tissues five and seven years after their introduction and were at the end of that period found to have preserved their smooth surface quite intact. Tendons of deer and kangaroo, though absorbable, resist the action of the tissues for many months. One knows how difficult it is to promote absorption of a sloughed tendon exposed in a wound. Long after the surrounding soft tissues are ready to unite they are retarded from doing so by the presence of dead tendon.

Catgut is one of the best substances generally available for sutures and ligatures but care ought to be exercised in choosing good material. For ligatures and sutures raw catgut ought to be selected, preference being given to such specimens as present the best physical properties and show that care has been bestowed on its manufacture. It must be evident that the subsequent preparation does not remedy physical defects originally in the gut, such as want of strength or roughness. When the catgut is selected it is then placed in a solution prepared for the purpose of increasing the resistance offered by the gut to the action of the living tissues. As the resistance required varies according to the use to which the catgut is to be put so the catgut is prepared with various degrees of resisting power, some hanks for rapid absorption and some capable of resisting the action of the tissues for longer periods. The gut must not be hardened in such a manner as to prevent leucocytal penetration, otherwise it will be too resistant and in this way may be no better than silk or wire. Experiments have been made in many directions with the view of obtaining a suitable medium for the preparation of catgut so as to obtain the objects in view. One of the best media which we have used is obtained by adding an aqueous solution of chromic acid to glycerine in definite proportions. This compound is found to act upon the catgut in the way of increasing its resistance to the action of the living tissue. Though producing a soft, pliable catgut, the degree of resistance imparted to the gut can be varied according to the time which the gut is immersed in the solution. The longer it is kept in the solution the more resistant it becomes. After it has thus been prepared it is stored in a carbolised glycerine solution. It is ready for use a fortnight after it has been introduced into the storage solution. When kept in this storage solution for a longer period—many months or several years—it becomes slightly more resistant to the tissues.

CAUSES WHICH RETARD ABSORPTION OF CATGUT SUTURES.

There are some conditions of tissue which modify the rate of absorption of this sterile gut suture. The greater the vascularity of the part within the limits of health (exclusive of parenchymatous tissue) the quicker will the absorption be, while marked avascularity retards absorption. In youth and full adult life the rate of absorption may be regarded as normal, while in very old and weak people the absorption is appreciably retarded. The variation in the absorption within these limits, however, is not so great as to make a practical difference. There are several points which influence the duration of the suture in the tissue while still maintaining the parts in apposition. The first is over-tension of the tissues under the suture, either by over-contraction of the tissues themselves or by over-tightening of the suture at the time of introduction. Both of these retard the absorption of the gut as the compressed tissue acted on by the suture gives way in front of the suture, so that leucocytal penetration of the gut is obstructed. The phrase is used, "The stitches cut their

way through." Secondly, the introduction of the gut into tissues deprived of their vascularity or the vitality of which is otherwise lowered. The catgut suture remains for long periods unacted on in the midst of a slough, the leucocytes not being able to penetrate the tissue to reach the gut. Thirdly, repeated movement of a stitch after introduction breaks the connexion of the suture with the living parts and prevents leucocytal penetration; so that if the catgut thread be moved frequently in the tissues the leucocytes cannot exert their living action in the gut and therefore it remains unabsorbed. Fourthly, septicity in a wound retards absorption by weakening the tissues and by degenerating and destroying the leucocytes. When gut becomes infiltrated by pyogenic organisms and their ptomaines, as well as by pus corpuscles, it becomes more resistant to absorption and may ultimately be extruded. An impervious suture answers better in the midst of suppuration. It is evident that not only an aseptic suture must be used, but it must be introduced into an aseptic wound before one can secure the advantages of such gut. If catgut be introduced into a collection of fluid in the midst of the living tissue such as blood, serum, or pus, they will remain for weeks macerated but still intact. If the gut should, however, come into contact with the living tissue at the side of such a collection, some erosion of the part of the foreign body in contact with the tissue would ensue. It is evident that mere maceration in the tissue does not account for absorption of the catgut.

THE MODE OF ABSORPTION OF CATGUT.

Twenty-four hours after the catgut has been placed in the tissues it is found to be surrounded by leucocytes which closely invest the gut and thereafter sooner or later, according to its resistant power, gradually erode its surface and penetrate into its interior. The strands of gut in contact with these leucocytes gradually undergo erosion and appear rough and pitted on the surface. At the same time many of the leucocytes in the vicinity of the gut become swollen and take on the colour of the catgut. Between these swollen leucocytes and the strands of gut fresh leucocytes appear in the vicinity, gradually taking the place of the swollen cells. The swollen cells seem as if they had absorbed portions of the catgut and were in process of ingesting it. Such swollen cells, marked by their size and discolouration, may occasionally be seen at a considerable distance from the catgut, as if they had wandered from the scene, either by their own amœboid action or were aided or pushed aside by the movements of the fresh cells going to the attack. Occasionally the swollen cells appear so bloated that a doubt arises whether for the time at least their amœboid power had diminished or was in abeyance. The principal invasion and erosion of the catgut thread is from the periphery which results in the thinning of the thread, it being by-and-by attenuated to a mere film which rapidly disappears. While this peripheral erosion is proceeding the absorption is further aided by the activity of the penetrating leucocytes which surround and detach minute portions from the periphery which are speedily devoured. The absorption of the catgut is due to the action of the living cells and therefore is dependent on their presence and on the facilities which are afforded them for acting on the catgut undisturbed. After absorption of the catgut has proceeded for some time, and while the absorption of other parts of the gut is still proceeding, an infiltration of embryonic connective tissue cells begins to appear which forms the nucleus of a new fibrous tissue which in attenuated form ultimately remains, marking the place of the foreign body. The amount of connective tissue which forms depends somewhat on the vascularity of the living tissue and on the rapidity of absorption of the catgut. The more rapid the absorption, other things being equal, the less the connective tissue.

The use of material such as has been described is of service in facilitating wound healing. One puts into a wound just such foreign bodies as are absolutely required and these, while being sufficient to effect the purpose for which they are intended, are afterwards speedily removed by the action of the living tissues. In aseptic wounds, before the patient comes out from the influence of the anæsthetic, the surgeon has done everything necessary to enable nature to heal the wound. Its first and only dressing is applied. That dressing being of the simplest, a layer of dry sterile gauze or a film of translucent celloidin just overlapping the wound and rendering it impervious. At the end of the period deemed sufficient for wound healing this dressing may be removed, or it may be allowed to remain until it is shed, when all the external portions of the sutures are found adhering to its surface. What a comfort to be able to say at the end of an operation that in all probability there is nothing further to be done by way of handling or touching the wound which will not be looked at until it is thoroughly healed. It is no longer necessary to disturb the patient by dressing in order to remove sutures which, after they have served their function, will be silently and perfectly removed by the activity of the living cells in the patient's body. A wound which while being made is painless and remains so throughout, which heals without inflammation or the production of pus and under the dressing applied at the time of the operation, is ideally perfect.

The Croonian Lectures

ON

BRIGHT'S DISEASE AND ITS VARIETIES.

Delivered before the Royal College of Physicians of London on June 7th, 9th, 14th, and 16th, 1904,

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LECTURE IV.[1]

Delivered on June 16th.

CHRONIC BRIGHT'S DISEASE.

MR. PRESIDENT AND GENTLEMEN,—Having considered some of the points in connexion with acute Bright's disease and acute nephritis I will now pass on to chronic Bright's disease. The difficulties of clearly differentiating the various forms of chronic Bright's disease are undoubtedly greater than those of separating various forms of acute nephritis and acute Bright's disease. In the first place it would not seem justifiable to include degenerations of the kidney under the term of Bright's disease, although doubtless some of them clinically greatly resemble the true forms of Bright's disease. Probably all writers will agree to separating the amyloid kidney from the category of Bright's disease, although we all know that some of the forms described as the large white kidney were really instances of amyloid degeneration. Amyloid degeneration is no doubt very apt to occur associated with Bright's disease. Still, the etiology and even the clinical history of the condition are so different from those of Bright's disease that it is more convenient to treat of it as a separate entity.

One of the main difficulties in the classification of Bright's disease is the question of the position or nature of the so-called granular kidney. So many writers still include this as a definite variety of Bright's disease notwithstanding the profound differences in its morbid anatomy and especially in its clinical history from those seen in true Bright's disease. Of course, if every kidney the surface of which is granular is to be called a granular kidney, then doubtless granular kidney must be included as a form of Bright's disease, since as a matter of fact there are very few forms of chronic Bright's disease in which the surface of the kidney is not either finely or coarsely granular. A large white kidney presenting the typical smooth surface is after all not so very common, and putting aside rare forms of the disease this is the only form of chronic Bright's disease in which the surface of the organ can be said to be entirely free from irregularity. The granular kidney, or as it is preferable to call it the red granular kidney or raspberry kidney, is such a very definite renal lesion, presenting but little variation in the different specimens which we see and having such a very definite clinical history, that it certainly seems more convenient to separate it from Bright's disease. As I have already said I think only confusion is caused by grouping it with those forms of Bright's disease in which the surface of the organ is granular. The tendency of including

[1] Lectures I., II., and III. were published in THE LANCET of July 16th (p. 125), 23rd (p. 191), and 30th (p. 283), 1904, respectively.

granular kidney as a form of Bright's disease may possibly be largely due to the theoretical pathology which was in vogue some years ago and which looked upon the red granular kidney as a stage in the evolution of chronic Bright's disease. No pathologist or clinician would admit at the present time that the ordinary typical red granular kidney is a final stage in the evolution of acute or chronic Bright's disease, although doubtless some forms of contracted kidney presenting a granular surface may in exceptional circumstances be such a final stage. The main reasons for including the granular kidney as a form of Bright's disease are probably the fact that in some instances it may have a toxic origin and therefore to a certain extent have a similar etiology to that of Bright's disease; and secondly, that some of the secondary effects produced on the body are similar to those seen in Bright's disease. Thus, putting aside the cardio-vascular changes which may or may not be the result of a granular kidney, uræmia is sometimes seen as a complication of the true granular kidney, and the same is true of certain inflammatory complications, such as pericarditis, although both uræmia and those inflammatory complications are much more typical complications of true Bright's disease.

If arguments such as these are valid in order to justify the inclusion of the granular kidney as a form of Bright's disease, similar arguments might justify the inclusion of such widely divergent lesions as the amyloid kidney or the cystic kidney, and then the term Bright's disease would simply become a label for almost any condition in which albuminuria and dropsy and uræmia were present. For these reasons the granular kidney will not be considered a variety of Bright's disease. At first sight it may seem desirable to look upon the lesions found in the granular kidney as part and parcel of a widespread arterial degeneration and this in a considerable number of cases is no doubt true, and more especially in those where notwithstanding the presence of very extensive arterial lesions the kidneys, although granular, are still large. Probably all pathologists would agree that this form of granular kidney might with justice be looked upon as part of a widespread degeneration. The difficulties alluded to above present themselves with the small red granular kidney. In this form of the lesion the general arterial changes are frequently as well marked as in the other variety but this is not invariably the case, and there are therefore difficulties in looking upon this form of granular kidney as merely a later stage in the evolution of the other and this justifies to some extent the opinion that such a lesion may be primarily renal.

Putting on one side the true red granular kidney two fundamental varieties of chronic Bright's disease may be recognised. The differences between the two forms are seen in the morbid anatomy and more especially in the clinical history and course of the disease. It is possible that there may be differences in the etiology, but there is so much uncertainty at present as regards the etiology of Bright's disease generally that it is not possible to be confident with regard to this. In the first form of chronic Bright's disease the kidneys present the appearances which are usually described as those of the large white kidney, although according to my experience the instances in which the kidney is really entitled to be called large or where there is much increase in size are not very numerous. Such kidneys are usually a little above the normal size but, as just mentioned, the increase may be much more considerable than this, the weight of the organ may be twice or even three times that of the normal kidney, the cortex is greatly increased in width, and this is especially well seen in the interpyramidal portions of the cortex. In colour it is opaque and waxy, the degree of pallor varying in different instances; the pyramidal portion, however, is congested and its colour affords a contrast to that of the surrounding cortex. The capsule strips readily and leaves the well-known smooth and somewhat marbled surface. On microscopical examination such a kidney presents changes in the glomeruli, in the tubules, and in the interstitial tissue varying in their degree of severity and also in the relative incidence on these three sets of structures. The epithelium of the glomerular chamber often shows signs of proliferation. The epithelium of the tubules usually presents profound changes, being shed in places and having lost its characteristic structure in others, and being replaced in others by a layer of glass-like hyaline cells. The tubules themselves are dilated and more or less obstructed by the débris formed by the separated epithelium. Casts are numerous and extravasations of blood may frequently be seen not only in the interstitial tissue but also in some of the tubules. The interstitial connective tissue is increased in amount and in some of the instances where the kidneys are quite large and smooth the increase in the connective tissue may be very considerable in amount. Hyaline degeneration of the vessels of the glomerular tuft is commonly present and it is by no means unusual to find young connective tissue in increased amount in the glomerular tuft. The lesions found in what is usually spoken of as the large white kidney no doubt differ in different cases in their relative incidence, but owing to all the elements of the kidney being affected the lesion may be well described as a diffuse one and there is something to be said for the term chronic diffuse nephritis sometimes applied to these cases.

In the second form of chronic Bright's disease, to which it is somewhat difficult to apply a name but which may perhaps be called for purposes of simplicity the contracted white kidney, the organ is very much smaller than normal, rivalling the granular kidney in size and sometimes weighing as little as from one and a half to two ounces; the colour both of the surface and of the organ on section may vary but it is usually of an opaque whitish yellow but very commonly with areas here and there of congestion so as to produce, especially on the surface of the organ, a mottled appearance. The capsule is usually markedly thickened and sometimes very considerably so. On stripping it leaves a coarsely granular surface, the granulations being of large size and extremely well marked. The stripping of the capsule does not commonly lead to much tearing of the renal substance and very often to none at all. The cortex is greatly diminished in amount and may even be reduced to one-sixteenth of an inch on section. The reduction in the amount of the cortex is general but at the same time is not necessarily uniform. The section of the cortex presents commonly a distinctly mottled appearance; the pyramidal portion of the kidney, like that of the large white kidney, is usually somewhat congested but not to the same marked extent, so that the contrast between the cortex and the medulla which is such a striking phenomenon in the large white kidney is not nearly so obvious in the contracted white kidney. On microscopic examination the most striking phenomena are, on the one hand, the large areas in which there are but little remains of renal tissue owing to the very great overgrowth of fibrous tissue. Many of the tubules have lost their epithelium and the great diminution in the size of the kidney is very largely dependent on such shedding and on the subsequent collapse of the walls of the tubules. In some areas may be found more or less extensive remains of renal tubules with the epithelium but comparatively little altered. In others the tubules are lined by hyaline and glass-like cells and it is by no means uncommon to find here and there dilated tubules lined with pavement-like epithelium approaching to the character of cysts. The glomerular chamber is thickened and the vessels of the tuft present marked changes both in the hyaline degeneration and in the fibroid overgrowth. There is a very great overgrowth of the interstitial tissue of the kidney generally and areas are found scattered over the kidney consisting of but little except fibrous tissue. The microscopic appearances of such a kidney present points of resemblance to those seen in the true granular kidney. On the whole it may be said that the overgrowth of fibrous tissue in the contracted white kidney is more uniform than that seen in the true granular kidney and that the epithelial changes are more marked. Further, in the contracted white kidney the arterial lesions only exceptionally reach the high degree of development seen in the true granular kidney and this is not only true of the arterial lesions of the vessels of the body generally but also of those in the kidney.

There are therefore marked differences in the macroscopic and microscopic appearances of the large white and of the contracted white kidney of Bright's disease in typical instances of the two diseases. But considerable difficulty is often experienced in correctly placing some forms of chronic Bright's disease. Thus very exceptionally kidneys are found very small in size and resembling in that respect the contracted white kidney, but on the other hand quite smooth on the surface and showing no great overgrowth of fibrous tissue, and it is difficult to classify such instances as these. Again, kidneys presenting many of the features of the contracted white kidney but of a somewhat larger size but always less than the

normal are seen. In these instances it is very common for the granulations on the surface seen on stripping the cortex to be smaller than those seen in the typical form of the contracted white kidney. It is owing to differences such as these in certain instances of the disease that the view has been advanced that all these forms of chronic Bright's disease are really stages in the evolution of one and the same malady and if our attention is confined to the study of the facts of the deadhouse there is no doubt much to be said for this view. Many pathologists who have absolutely given up the theory that the true red granular kidney is a final stage in the life-history of Bright's disease still hold the view that the contracted white kidney is the sequel to the large white kidney and that the large white kidney is a sequel of acute Bright's disease. In other words, they consider that there are, so to say, two forms of interstitial nephritis, one the sequel of chronic parenchymatous and tubular nephritis and the other associated with the widespread arterial degeneration known as the true granular kidney. Others have attempted to overcome the great difficulties in the interpretation of these cases by suggesting that in some instances of the contracted white kidney we are really dealing with the true red granular kidney in which a subacute tubular nephritis has occurred as a complication.

In addition to looking upon the contracted white kidney as a sequel of the large white kidney or as a true granular kidney with an acute or subacute nephritis superimposed there are at least two other modes of origin for this variety of renal disease. It might be regarded as a sequel of acute nephritis or on the other hand it might be a definite variety of Bright's disease, that is to say, a form of malady maintaining its individuality throughout its evolution. These difficulties as regards the correct interpretation of this very definite form of renal disease cannot, I think, be determined solely from considerations based on the morbid anatomy of the disease, but the clinical history of Bright's disease must also be taken into account. Even on grounds afforded by the study of morbid anatomy it is improbable that contracted white kidney can be looked upon as a true granular kidney with a subacute nephritis superimposed. The interstitial overgrowth is far more irregularly distributed in the red granular kidney, so that the pattern of a microscopic section is different, and by these means sections of these two forms of renal disease may often be readily differentiated. Further, the arterial lesions in the renal vessels of the red granular kidney, and especially the endarteritis, are very much more marked, although, of course, it must be admitted that in most instances of the contracted white kidney somewhat similar arterial lesions are found to a considerable degree of development both in the renal vessels and those of the body at large. The contracted white kidney, however, may occur and cause death from uræmia without the arterial lesions in the body generally reaching the high degree of development that we associate with the red granular kidney. In some instances of very advanced forms of this lesion neither the arteries generally nor the heart present any marked changes, such as endarteritis and hypertrophy. This absence of cardiac hypertrophy in some forms of chronic Bright's disease, not only where the kidneys are large but also where they are small and fibroid, has led some writers to differentiate these cases as a definite variety under the term of aplasic Bright's disease.

The conditions determining the absence of cardio-vascular changes in cases of contracted white kidney are unknown. It can scarcely be dependent, as has been suggested, on an incapacity on the part of the tissues to respond to a stimulus, inasmuch as this absence of cardio-vascular changes is not uncommonly seen in the most advanced and typical forms of the contracted white kidney occurring in young adults. This affords, I think, a point of distinction between the contracted white kidney and the true granular kidney, since in the former it is not uncommon to meet instances where not only the vascular lesions are ill-developed in the general vessels of the body but the cardiac hypertrophy may be absent, whereas in the latter, the true granular kidney, it is certainly extremely rare, if not unknown, to find a renal lesion except as part and parcel of a widespread arterial degeneration, and it is more common to find the lesions in the heart and in the blood-vessels generally advanced to a high degree with the renal lesions comparatively slight than to find the converse.

Another line of argument that may be advanced in order to discriminate between the contracted white kidney and the granular kidney is that the former on microscopic examination does not show any changes that can be looked upon as indicative of the presence of an acute nephritis. In many instances the disease causes death more or less suddenly or after a short illness in patients who may have maintained apparently good health until very shortly before their last illness, yet even in these instances the microscopic appearances of the kidney show essentially chronic changes. On these grounds, therefore, quite apart from the clinical history of the cases which we will consider later, I see no reason for looking upon the contracted white kidney as a red granular kidney in which a subacute or acute nephritis has occurred as a complication. There is undoubtedly more to be said on morbid anatomy grounds for looking upon this lesion as a sequel of the large white kidney. The great diminution in the size of the organ in the contracted white kidney is no doubt largely dependent on the shedding of the tubular epithelium and the practical disappearance of large areas of renal tubules; and of course it must be admitted that kidneys presenting the appearance of the large white kidney are seen of all sizes, so that it would not be difficult to collect a series of cases from the most extreme large white kidney on the one hand to the extreme contracted white kidney on the other hand. In the large white kidney there is an overgrowth of fibrous tissue varying in amount and the greater amount present in the contracted white kidney might be looked upon as a result of a progressive change possibly associated with the destruction of the epithelium. Further, the arterial system and the heart do undergo changes, as is well known, in the large white kidney and therefore these also might be accounted for.

Confining ourselves, however, strictly to the morbid anatomy of the two diseases there are objections to accepting this view. In the first place, it is definitely known that the large white kidney may remain large for many years. Hence the conversion of the large white into the contracted white kidney could not at any rate be a normal or a necessary sequel. The overgrowth of connective tissue present in the large white kidney would seem to be associated with the finely granular appearance of the surface of the cortex. This is especially well seen in those specimens of the large white kidney which are but little above the normal kidney in size, whereas the granulations seen in the contracted white kidney have a totally different appearance owing to their large size. Further, the proliferative changes which are seen to such a remarkable degree in the glomerular chambers of the large white kidney are not, so far as my experience goes, present in the glomeruli of the contracted white kidney. It may, of course, be argued that none of these points of difference in the morbid anatomy are of sufficient importance to justify the conclusion that the one lesion is not necessarily derived from the other and, as I have already stated, I think myself that the main reason for looking upon the contracted white kidney as not necessarily dependent on, or as a sequel of, the large white kidney is to be derived from clinical rather than from morbid anatomy considerations.

The remaining question is that the contracted white kidney may possibly be the sequel of acute nephritis. This is a view that on *a priori* grounds is very probable and one which scarcely can either be proved or disproved by the morbid anatomy of the disease, so that it will be convenient to pass on to the consideration of some of the points in the clinical history of chronic Bright's disease. There can be little doubt that, from the clinical point of view, two varieties of chronic Bright's disease may be differentiated. The first is where the prominent effects are dropsy and the tendency to the occurrence of secondary infections, more especially with inflammation of various serous membranes. In the second variety of the disease the prominent effects produced are grave disturbances of nutrition, such as marked wasting and the occurrence of uræmia and especially of acute uræmia, and there is further the very marked negative characteristic that dropsy is either completely absent or at any rate very trivial in amount and it is much more common for it to be completely absent. Like all clinical distinctions these are not absolute; thus uræmia may undoubtedly occur in both forms of the disease and it might even be said that chronic and subacute uræmic symptoms are common in that form of Bright's disease in which dropsy is prominent. But the most severe forms of uræmia, known as the acute or even the fulminating, are in my opinion peculiarly associated with that form of chronic Bright's disease where dropsy is absent or ill-developed. Inflammatory complications, such as pericarditis, pleurisy, pneumonia, &c., undoubtedly occur in both varieties so that the main differentiation from a clinical

standpoint is according to the presence or absence of dropsy and the degree and development and variety of the uræmic symptoms present. Wasting, no doubt, is oftentimes present to a very high degree in the cases where dropsy is a marked feature but it is masked by the occurrence of the dropsy, and the symptoms produced by the waterlogged condition of the patient commonly mask those dependent on the disturbance of the nutrition. Wasting is probably of universal occurrence in all serious kidney diseases but it reaches a very high degree of development in some forms of chronic Bright's disease, rivalling that seen in malignant disease, and from time to time cases are seen where the patient seeks advice solely on account of the progressive loss of strength and flesh and where the renal origin of the trouble may be completely overlooked by a careless observer. Although wasting is the most conspicuous disorder of nutrition produced by chronic Bright's disease, another remarkable effect sometimes seen is pigmentation somewhat resembling the pigmentation of Addison's disease, and one of the specimens on the table of contracted white kidney is derived from a patient where the great loss of strength and of flesh and the occurrence of pigmentation with some vomiting led to the diagnosis of Addison's disease, although the case was really one of contracted white kidney.

The clinical picture of ordinary chronic Bright's disease associated with dropsy is so well known that it is quite unnecessary to consider it at any length. But the other form of chronic Bright's disease is one which I am convinced is very frequently overlooked owing to the latent course the malady frequently runs and the apparent obscurity of many of the symptoms produced. One of the most puzzling features of this form of chronic Bright's disease is the fact that such a large number of the cases are seen in young persons frequently under 30 years of age, not uncommonly under 25 years, who state that they have had good health until perhaps a few weeks, or even sometimes a few days, before the onset of symptoms that are rapidly fatal. It is one of the most striking instances in medicine of a disease that is apt to run a latent course. I have known of an instance in an apparently healthy young man, 25 years of age, presenting no symptoms and where the condition was discovered as a result of an examination for life insurance where death resulted from acute uræmia within a fortnight of the discovery of the existence of the albuminuria. In other cases the onset has been even more sudden than this: persons apparently in good health have been seized suddenly with acute uræmia of either the epileptiform or the comatose variety.

The forms which the uræmia may assume in this variety of Bright's disease are numerous and liable to give rise to considerable difficulty sometimes in the diagnosis. Thus it is not very rare for the uræmia to be of a maniacal type and hence lead to confusion between these cases really of chronic Bright's disease and acute mania. I have seen one instance where a young woman was admitted to hospital on account of cataleptic phenomena and where death resulted after a very short illness from acute uræmia. In other instances the first symptom that may attract attention is that very common uræmic symptom of intense dyspnœa leading perhaps to the diagnosis of asthma, where in the course of a few hours the prognosis is completely falsified owing to the so-called asthma being really uræmic dyspnœa associated with this grave lesion of contracted white kidney. I think it may be stated that on the whole these patients are most likely to come under observation suffering from one or another of the many forms of acute or even of subacute uræmia. Although these patients are liable to present prominent uræmic symptoms during the last illness there are other features which are fairly characteristic of the second variety of chronic Bright's disease. Thus the patients are usually young, generally under 35 years of age and frequently between 30 and 20 years of age, and, as I have already mentioned, they may present marked symptoms, general loss of strength with wasting or some disturbance of nutrition, such as darkening of the skin. Headache may be a prominent symptom, and owing to the frequent occurrence of very marked fundus changes in this variety of Bright's disease confusion with cerebral tumour or even cerebellar tumour may occur. A considerable proportion of the cases are seen in young women and these frequently present an aspect superficially resembling that of chlorosis, the resemblance being all the greater in some instances owing to the presence of headache. Perhaps the most remarkable feature of this variety of chronic Bright's disease is the one already slightly alluded to above, that the disease is apt to run a more or less latent course or at any rate to produce such apparently trivial symptoms as to escape notice until the final uræmic manifestations. This is very different from what occurs in the other variety of Bright's disease where dropsy is such a marked sign, and it is sometimes difficult to make patients in whom this variety of the disease is recognised as a result of complete examination to realise the gravity of the condition. The uræmic symptoms are not only very commonly present but they are the usual cause of death; in other words, the acute form complicating this variety of Bright's disease is of far more serious import than the acute uræmia complicating other varieties of renal disease, as, for instance, acute nephritis or acute Bright's disease.

There are not only these marked differences in the clinical symptoms present in the two forms of chronic Bright's disease but the urine also presents characteristic differences in the two conditions. In that form of Bright's disease associated with dropsy the urine is necessarily diminished in quantity and contains a variable, but usually large, amount of albumin, together with a considerable variety of casts. In the second form of chronic Bright's disease the volume of the urine is not only not diminished but is very commonly above the normal, resembling in its quantity that seen in the true granular kidney. The specific gravity is low but the amount of albumin is very considerable, amounting to a quarter or a third or even to a half. Casts are present of the hyaline and granular varieties but not necessarily so abundant as those seen in the other form of the disease. So far as my experience goes this form of Bright's disease is the one where there may be the maximum loss of albumin, inasmuch as there is not only a considerable percentage of albumin in the urine but the quantity of the latter may be increased and thus, though the percentage quantity of albumin present be less than that seen in the large white kidney, the total daily loss is greater owing to the great difference in the quantity of urine excreted in the two conditions. The combination of abundant or even increased excretion of urine containing a moderately high percentage of albumin is, no doubt, the reason that many look upon the condition as one of the red granular kidney complicated by the supervention of acute or subacute nephritis, but we have already seen anatomical reasons for not accepting this conclusion.

This second form of chronic Bright's disease, then, is characterised by its tendency to occur in the young, by the excretion of an abundant highly albuminous urine, by the clinical course being either a latent one or else one where the main symptoms may be said to be those of disturbance of nutrition, and most important of all by the terminal illness being of a sudden onset and characterised by the predominance of uræmic symptoms. On post-mortem examination in the second variety of the disease the contracted white kidney is found. The course of the illness in this variety of Bright's disease is not only apt to be latent but very frequently these patients state that they have never suffered at any time in their life from dropsy, and this, to my mind, is one of the main reasons for thinking that the condition is not necessarily the sequel of the large white kidney. In fact, in the typical forms of the disease, occurring especially in young women, I very much doubt whether it has any relation at all to the large white kidney. It must, however, be admitted that we sometimes see patients dying from uræmia without the presence of dropsy where in the past dropsy has been present, and in such patients chronic diffuse nephritis resembling that seen in the large white kidney may be found with perhaps rather more overgrowth of the interstitial fibrous tissue. Such cases, however, both in their clinical history and in their morbid anatomy, are not precisely the same as those with which we are now dealing, and, as has already been mentioned, it is definitely known that the large white kidney may remain a large white kidney for many years. I think, therefore, it may be stated confidently that the contracted white kidney, both from the clinical study and from the study of morbid anatomy, is not necessarily the sequel of the large white kidney.

No support is afforded by the study of the clinical symptoms to the idea that the contracted white kidney is a red granular kidney in which subacute or acute nephritis has occurred. The red granular kidney produces fairly typical clinical symptoms in that it occurs in elderly patients and cardio-vascular symptoms form a marked feature of the illness and there is a far greater

tendency for the disease to destroy life by the occurrence of such complications as cerebral hæmorrhage and for the occurrence of uræmia. It is quite true that sometimes the sudden occurrence of uræmic symptoms suggests the onset of an acute complication, but still it is characteristic for acute symptoms to arise in many chronic diseases and even to be fatal without the onset of any such acute complication. This, for instance, is seen especially in diabetes and in hepatic cirrhosis. Acetonæmia in the one and cholæmia in the other, it would seem, may occur as a result of the progressive destruction of gland tissue. In these cases of contracted white kidney the urine at the time of the occurrence of the fatal uræmia does not present any changes that could be looked upon as indicative of acute nephritis. It is by no means uncommon for large quantities of urine to be excreted during the uræmic period, although perhaps it is more usual for the quantity to be diminished. The urine is not necessarily more albuminous during the terminal stages of the illness than at earlier periods. It would seem, therefore, from the study of the morbid anatomy, from the course of the clinical symptoms, and from the characters of the urine that the contracted white kidney is a distinct entity and not necessarily related to the large white kidney or the true granular kidney. One of the remaining problems is to consider the relationship, if any, existing between this form of Bright's disease and acute affections of the kidney, such as acute nephritis or acute Bright's disease. There can be no doubt that both acute nephritis and acute Bright's disease may occur in patients who subsequently may suffer from Bright's disease in one or other of its forms, and it would be rash to deny that the contracted white kidney may sometimes have that origin. It is, however, quite certain that it may occur in persons who have never suffered from dropsy and who have never been laid up by any serious illness and it is difficult to suppose that in all these cases acute nephritis has really been present at some antecedent period and has not been recognised. Not only may no history of acute nephritis or acute Bright's disease be obtained but sometimes no history of the acute specific diseases which are the more potent causes of the renal complications can be elicited and my own feeling is that not uncommonly this form of Bright's disease may arise independently and be slowly progressive and that it is not necessarily the sequel of an acute renal infection although it is very probable that in some instances it is.

ON DIAPHRAGMATIC HERNIA OF THE STOMACH AND ON TORSION OF THE SMALL OMENTUM AND VOLVULUS OF THE STOMACH IN ASSOCIATION WITH IT.

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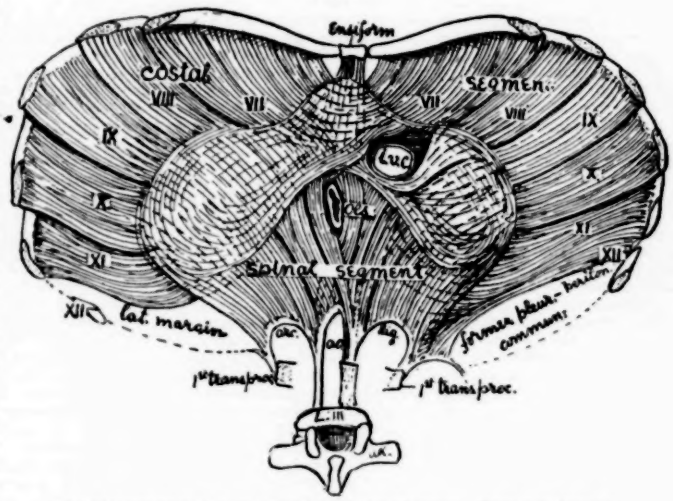
A GASTRIC hernia is usually diaphragmatic. It is exceedingly rare for the stomach to be found in any of the more usual forms of external hernia, if post-operative ventral protrusions occurring above the umbilicus be excepted. But hernia of the stomach constitutes a very considerable proportion of all cases of diaphragmatic hernia and the relations of the viscus to that structure are a sufficient explanation of its relative frequency. The object of the present paper is to consider the various conditions that are met with when the stomach is engaged in such a hernia. It is based upon material derived from 63 cases.

Diaphragmatic herniæ are of three kinds: (1) congenital; (2) traumatic; and (3) acquired.

1. *Congenital.*—Congenital cases are always due to apertures in the diaphragm resulting from imperfect development. The nature of the diaphragm has been discussed by Dr. Arthur Keith in his recent Hunterian Lectures on Enteroptosis.* He points out that "in structure, in development, in evolution, and in action the diaphragm is a true digastric muscle made up of two segments—a spinal or dorsal and a costal or ventral." In man with the assumption of the erect posture the spinal segment spreads out laterally until the spinal and the costal segments almost meet (Fig. 1). In many subjects there is a fibrous interval between the origin and insertion of the diaphragm and this interval marks the site of the original communication between the pleural and peritoneal cavities and also the outer or lateral margin of the muscle. Dr. Keith states in THE LANCET of March 7th, 1903, p. 635, that "congenital diaphragmatic herniæ occur between this lateral margin of the diaphragm and the costal wall and in such cases the free lateral margin of the diaphragm can be seen very distinctly." No doubt this explanation is the correct one in many cases, for instance, in those—not infrequent—in which the diaphragm is stated to have been deficient or absent on the left side (see Fig. 2)

FIG. 1.



The diaphragm spread out and viewed on its thoracic aspect. Fibres pass through the central tendon and unite the muscular fasciculi of the spinal segment to those of the costal segment. (From THE LANCET of March 7th, 1903, p. 635.)

FIG. 2.

Large oval deficiency on the left side of the diaphragm in a case of congenital diaphragmatic hernia. (From Dr. Thomas Balfour's paper, *Edinburgh Medical Journal*, vol. xiv., p. 885.)

* THE LANCET, March 7th and 14th, 1903.

and in one (34) in which there was a fissure between the central tendon and the cartilages. But not every protrusion takes place external to the lateral margin. In one the anterior portion of the diaphragm behind the sternum and the cartilages was deficient and a gap existed bounded by a tense lunar arch (48). In other cases the aperture was in the tendon.

In stomach hernia the gap is in most cases on the left side but in three instances it was on the right and the presumption is, when it is not definitely stated, that the protrusion occurred into the right pleura (20, 30, 38). Of 24 congenital cases four were met with in fœtuses, five in children who died at birth, and 15 in persons whose ages varied from six weeks to 60 years.

2. *Traumatic.*—Of 21 cases of stomach hernia following injury seven were due to wounds, seven to crushes, six to falls, and one to "being run over." The wounds were either stabs, sword or bullet injuries. Of the crushes two were "buffer accidents" and the falls were usually from a height. In every instance there was an aperture and this was more frequently situated in the tendinous than in the muscular part of the diaphragm and rarely near the origin of the muscular part from the ribs. In cases where the patients died soon after the injury the opening was of the nature of a tear or rent, but if the sufferer lived for some years it became a well-defined aperture, sometimes with rounded, smooth, and callous edges, and not infrequently there were adhesions in its neighbourhood between adjacent parts or the viscera engaged in it. The diaphragmatic wound was never fatal *per se* and the patient not infrequently survived unless there were associated injuries of a grave character.

3. *Acquired.*—The existence of a sac has been held by the writer to be conclusive evidence that the rupture has been acquired. Eight cases fulfil this requirement. Three found their way into the right chest (6, 36, 63) and four into the left (29, 31, 42, 61). The eighth case was the remarkable one recorded by Dr. Bright (9) in which a membranous sac bulged into both right and left chest (Fig. 3). It was

FIG. 3.

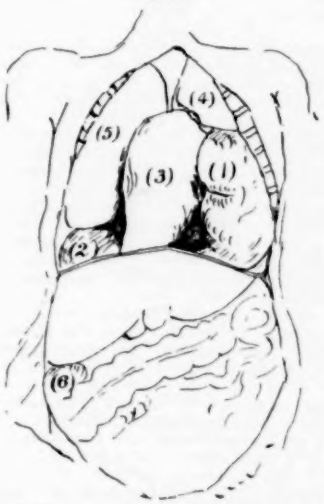
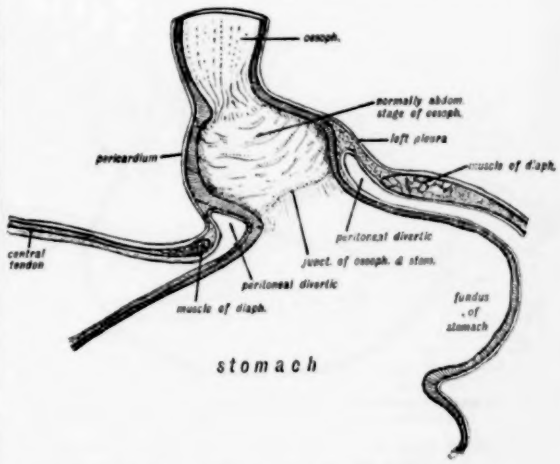


Diagram in connexion with Dr. Bright's case. 1, Larger portion of stomach. 2, Smaller portion of stomach. 3, Heart in the pericardium. 4, Left lung. 5, Right lung. 6, Distended pelvis of right kidney. (From Guy's Hospital Reports.)

thought to owe its origin to a congenital splitting of the diaphragm, but in the light of Dr. Keith's explanation of the development of the midriff this suggestion is almost certainly incorrect. Besides these there were two other cases (44, 33) in which no statement is made as to the existence of a sac, but since the hernia took place through a dilated œsophageal opening in each case there is a strong presumption that both were acquired. In another instance (44) the hernia passed through a dilated œsophageal opening. Apparently there was no sac but the symptoms dated from a time when the patient "felt something rip in his inside" whilst lifting a pig of iron. Lastly, there is a form of hernia of the stomach through the œsophageal opening, of which Dr. Keith and Dr. Rigby have recorded an example. Here, owing to the descent of the diaphragm from the giving way of its supports, the cardiac orifice of the stomach comes to lie within the thorax and above the level of the muscle (37). (Fig. 4.) In all,

FIG. 4.



An example of diaphragmatic hernia of the stomach in a case of ptosis. (From the proceedings of the Anatomical Society of Great Britain and Ireland and published in THE LANCET of March 7th, 1903.)

therefore, there were 12 cases of acquired hernia and it is of much interest to see how they were associated with certain natural weak places in the diaphragm. In no less than eight (6, 31, 34, 35, 37, 44, 61, 63) the protrusion was either through, or doubtless determined by, the œsophageal aperture.

Long ago Dr. T. Balfour pointed out that even when no hernia existed these natural foramina were occasionally found of unusual size. The œsophageal foramen particularly seems to predispose to rupture and were it not that gravity exercises a contrary influence it would probably be met with oftener. Indeed, its more frequent occurrence in quadrupeds has been attributed by Sir Astley Cooper to the position of their bodies. There is also a weak spot on either side of the origin of the muscle from the ensiform cartilage, between that and the costal origins. This gap in the muscle (Fig. 1) is perforated by the superior epigastric branch of the internal mammary artery and in one case (34) the hernia followed this path. It may be added that herniæ, though not of the stomach, have been known to take place through the opening transmitting the splanchnic nerve.

Hernia of the stomach may be (1) complete; (2) incomplete; (3) partial or a Richter's hernia; and (4) associated with other viscera.

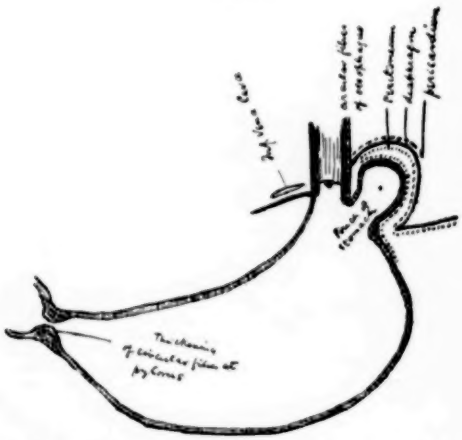
1. *The complete form.*—Of this there is not much to be said. The whole stomach has passed out of the abdomen into the sac or the thoracic cavity. With it there is certain to be more or less of the omentum and it may be a small portion of the duodenum. The greater curvature has in some cases been said to lie uppermost.

2. *The incomplete form.*—In incomplete hernia of the stomach the pyloric extremity is most frequently protruded, occasionally the cardiac end, and sometimes the middle portion of the viscus. The whole lumen, however, is engaged.

3. *Partial or Richter's hernia of the stomach.*—Here the hernia is formed by a pouch-like projection of the stomach wall and does not include the whole lumen. Only two instances have been met with and in neither is there any clinical history. One is recorded by Dr. C. T. Andrew. "A dome-shaped pouch of the diaphragm existed immediately to the left of the œsophageal opening and into it a portion of the cardiac end of the stomach, measuring vertically about an inch, was drawn. The hernia could easily be pulled down and the part of the stomach wall that lay against the neck of the pouch was thickened." The condition was found in the dissecting-room in a female subject and had probably caused

no serious trouble during life (31). (Fig. 5.) The other is a specimen in the Guy's Hospital Museum, No. 1088. A pouch

FIG. 5.



Stomach, showing diverticulum of cardiac end in the pouch of the diaphragm. (From THE LANCET of March 21st, 1903, p. 792.)

formed from the greater curvature has passed through an aperture in the diaphragm and has evidently been strangled and the cause of death (20). (Fig. 6.)

FIG. 6.

Guy's Hospital Museum, No. 1088. Diaphragmatic hernia. A portion of the diaphragm with the stomach and spleen mounted to show a smooth-edged perforation of the diaphragm, measuring about two inches in diameter, through which part of the stomach and great omentum have passed into the thoracic cavity and become strangulated. Below the diaphragm the stomach is seen with its lesser curvature and its œsophageal and pyloric orifices directed downwards.

4. *Diaphragmatic hernia in which the stomach is associated with other viscera.*

Table showing the Various Associated Viscera in the Hernia.

1.	Stomach only	9 cases.
2.	Stomach and part of duodenum	3 ,,
3.	Stomach and omentum	5 ,,
4.	Stomach and spleen	3 ,,
5.	Stomach, spleen, pancreas, and colon	5 ,,
6.	Stomach, spleen, and transverse colon	6 ,,
7.	Stomach and colon	22 ,,
8.	Stomach, liver, and small intestine	5 ,,
9.	Stomach, spleen, liver, omentum, and small intestine (part)	2 ,,
10.	Almost all abdominal viscera	1 case.

Some interesting facts are brought out by this table. The colon, the spleen, the pancreas, and the liver are the viscera most likely to be found associated with a stomach hernia. The colon was met with 33 times, the spleen 16, and the pancreas five. The stomach was alone with the colon in 22 cases and alone with the spleen in three but the spleen and the colon were together in 11. In every case in which the pancreas was found the spleen and part of the colon were also protruded. The frequent presence of the colon, spleen, and pancreas is not to be explained by their proximity to the aperture but to their close anatomical connexions with the stomach. Thus the colon follows the stomach because it is dragged after it by the gastro-colic omentum. The cardiac end of the stomach when it leaves the abdominal cavity pulls the spleen in its wake by the gastro-splenic omentum and the vessels and fascia which it incloses, and the pancreas follows owing to its connexions with the splenic vessels and the subperitoneal fascia which accompanies the vessels into the different viscera. Consequently, as might be expected, the spleen is more frequently present than the pancreas, but the pancreas is never found without the spleen. The pancreas is the one abdominal viscus that has the credit of never having been found in a hernial sac. It may still continue to hold this record, for in all five instances it had passed through apertures or large gaps. The liver was present in all in seven cases.† The gap is usually considerable when the liver is present, but though the close proximity of the liver to the gap cannot be overlooked yet it is probable that the traction exerted upon it by the gastro-hepatic omentum is a more determining cause. The presence of the small intestine, with the exception of the first part of the duodenum, is more accidental.

PREDISPOSING AND EXCITING CAUSES.

There is nothing to add to what has already been said about congenital apertures except that in one instance (28) the defective development was attributed to "maternal impression" in the early weeks of pregnancy. The causes of traumatic cases have also been considered. In the acquired the natural foramina are an obvious predisposing condition and muscular exertion is a frequent exciting cause. Thus in the case of a weakly child (6) a severe attack of vomiting lasting several days probably induced the rupture. In another (32) excruciating pain in the left hypochondrium came on during a violent effort to escape a blow and was followed by symptoms which ended in death. In a third (41) the patient was seized with a paroxysm of coughing whilst attempting to lift a pig of iron and felt something "rip in his inside." He died five days later from strangulation of the protruded viscera. In Dr. T. Churton's and the writer's case symptoms of stomach trouble became manifest a few months after a confinement (23). There is another case (19) in which the symptoms dated from a long and tedious confinement, but a few months before the patient had received a stab which most likely wounded the diaphragm. In the interval she had recovered from the injury and had enjoyed her usual health.

In one of the congenital cases, too (13), symptoms developed after a fit of crying and the infant, who had been in perfect health before, died in 24 hours. Lastly, there is the negative pressure within the thorax during inspiration to be taken into account. This is of most importance when a hernia has already formed and one of the lungs is more or less compressed and incapable of expansion. Under such conditions it would tend to prevent spontaneous reduction of a protrusion which might in many instances occur under the favouring influence of gravity. This influence must in diaphragmatic hernia be a powerful one, as a moment's consideration of the ease with which many inguinal and femoral herniæ disappear in the recumbent posture will show. Consequently some idea may be formed of the effect likely to be exerted by the thoracic aspiration.

SYMPTOMS.

In a condition in which not only the alimentary canal but the lungs and heart are likely to be incommoded seriously very varied symptoms may be anticipated. But various and irregular as they are, yet the majority fall naturally into one or more of the following groups: (1) dyspnœa; (2) dyspepsia; (3) obstruction and strangulation; and (4) tetany. In a few cases there were no symptoms referable

† This does not appear from the table but in addition to the five cases mentioned there the liver was found in one of the spleen cases and in another where the spleen and pancreas were present.

to the hernia ([21], [28], [40]) and one case at least was found unexpectedly ([41]). Great thirst has several times been noted but there was always some serious complication in the shape of other injuries or a mortal consequence of the rupture ([1], [7], [21], [28]).

1. *Dyspnœa.*—Respiratory difficulties are very common. They may be due to the pressure of the herniated viscera upon the heart or the lung. Sometimes one and sometimes the other may be chiefly answerable for the dyspnœa, but as in stomach hernia the left side is nearly always affected most likely both take a share. In one case in which the hernia was on the right side there was no complaint of difficulty of breathing. Difficult breathing in some instances is constant and may last for years. Sometimes there is a liability to sudden attacks at intervals. More often it is brought on by exercise or going upstairs, after a full meal or when food disagrees, though "the asthma" of one patient was relieved when he ate. In more than one case in which respiration was embarrassed there was lividity. In one ([2]) the face would become livid during the attack and in this and another the dyspnœa ended fatally ([32]).

2. *Dyspepsia.*—Where the hernia is chronic there is often a history of discomfort and vomiting after meals and sometimes of pain. These symptoms are probably induced by the difficulty in the propulsion of food from the stomach and are associated with dilatation of that viscus, often extreme, which is frequently described in the records of these cases.

3. *Obstruction and strangulation.*—The dyspeptic symptoms are only the earlier signs of obstruction which is incomplete and varying in degree, but they are very liable sooner or later to culminate in an acute attack of complete obstruction in which violent or excessive vomiting, often without retching, is accompanied by pain and constipation and terminates life in a few days. It is probable that in many of these cases a certain degree of strangulation is present and that they gradually merge into that class of case in which there is very definite interference with the circulation.

Lack of precision in description of the necropsies makes it impossible to form any real idea of the frequency with which strangulation occurs, but there can be no question that strangulation was the cause of death in at least seven cases ([10], [18], [43], [44], [52], [61], [63]) and it is more than probable from the severity of the symptoms that it was present in six others.

4. *Tetany.*—In view of the attention that has been attracted of late to the association of tetany with gastric conditions the following brief report of a case under the late Sir Russell Reynolds ([19]) of diaphragmatic stomach hernia is of more than passing interest.

CASE 1.—A woman, aged 29 years, had been stabbed about the seventh rib on the left side some seven years before admission to University College Hospital. Though the lung was wounded she recovered good health. Then she had a long and tedious confinement and never recovered strength, suffering from repeated vomiting after taking food. This state of affairs had gone on for six years. She remained in hospital nearly five months without any great change. On March 29th she was flushed and uneasy. On the 30th contractions of the muscles of the forearms and arms were noticed. The hands were adducted, the fingers and forearms were flexed, resisting extension, and the patient could not move them. Then she became unable to open her mouth and had pain in the back and mouth. The temperature was 103·6° F. In four hours from the commencement of the spasms she died in a state of general tonic spasm. At the post-mortem examination the whole of the stomach, with the exception of a small portion at the cardiac end, was found to be displaced together with several inches of the transverse colon and some omentum into the left thoracic cavity through an opening near the left edge of the central tendon of the diaphragm. The hernia was as large as two fists and had displaced the heart to the right. There was no tight constriction at the neck. There were adhesions both above and below the diaphragm.

PHYSICAL SIGNS.

The physical signs are very indeterminate. This is only what might be expected when it is remembered that a correct diagnosis has rarely been made before a post-mortem examination. Signs, indeed, are often marked but the difficulty lies in their interpretation. They may be divided into (1) those of prime importance and (2) those of subsidiary value.

1. *Signs of prime importance:* (*a*) *Stomach or intestinal noises in the chest.*—The uncertainty in connexion with this sign lies in the possibility of the sounds being "transferred." Coupled with other signs, such as absence of respiratory murmur, it may be almost diagnostic and, indeed, it would appear that in some of the very few cases in which a diagnosis has been made during life it has been by the importance attached to them ([24]).

(*b*) *Intestinal peristalsis communicating writhing movements to the chest wall.*—Such a sign would be of the utmost value if it were of frequent occurrence. It has, however, only been noted once (Holt) and in the case of a child ([46]). It is obvious that for it to occur the chest wall must be very supple and therefore it is only in the case of an infant that there would be a possibility of it being seen. It was due to the intestines in Holt's case, but there is no reason why stomach contractions should not be visible under similar suitable conditions.

(*c*) *Displacement of the heart to the right side.*—As a very large majority of all stomach herniæ occur into the left chest this is of frequent occurrence. It is, of course, only of value when joined to other signs.

(*d*) *A respiratory bruit.* In one case (Case 2, *infra*) there was heard over the left lower ribs in the posterior axillary line a peculiar blowing sound which was evidently connected with the respiratory movements. Had it been heard in the upper part of the chest it would have been described as "amphoric." One auscultator described it as "bubbling," but to most of the others who listened it was a "dry" sound. Its importance was not grasped at the time. It was not understood at all, but at the necropsy its explanation was obvious. It was produced by the forcing of gas during expiration from the herniated portion of the stomach into its abdominal portion through the narrow orifice caused by the constriction at the neck of the sac. It is hardly likely to occur with any other part of the alimentary canal than the stomach and with that only when a considerable portion lies in the thorax and another large portion in the abdomen. It implies the existence of a patent communication between the two portions at the neck of the sac and consequently the absence of strangulation *by the neck* is a fair inference. Its importance, therefore, when strangulation exists will be seen when volvulus of the stomach and torsion of the small omentum are discussed, for the latter of these conditions was present in the case in which it was heard.

2. *Signs of subsidiary value.*—(*a*) Absence of breath sounds; (*b*) alterations in resonance; (*c*) changes in shape and deficient movement of the side of the chest in which the hernia is situated; (*d*) sinking in of the epigastrium; and (*e*) inability to lie on the opposite side. Of most of these it may be affirmed that they vary in degree, are by no means constant, and are only of practical use as an aid of more or less value in the interpretation of some of the more important signs mentioned above.

PATHOLOGY.

1. *Adhesions.*—Adhesions in the absence of strangulation are not very common. When they do occur they are usually omental and in the vicinity of the aperture.

2. *Chronic ulcers.*—In one case ([3]) in which the condition had existed for years there were two or three deep chronic ulcers.

3. *Distension of the stomach.*—This is often present and in some cases is enormous. Especially does it seem to have called for comment in those cases in which obstructive symptoms were present, but the latter were not necessarily associated.

4. *Accidental perforation.*—Distension may lead to thinning of the stomach wall and has enabled a trivial accident to produce perforation and the extravasation of the copious contents into the pleural cavity. In the case in which this happened hæmorrhage was found to have taken place from a vessel which opened upon the perforation ([1]).

5. *Strangulation* and its consequences differ little from the same conditions elsewhere, but from the circumstance of the viscus protruding in many cases into the pleura that cavity may participate in the inflammation and a considerable pleuritic effusion may result.

The ulceration that occurs in strangulation of the stomach seems to be different from ulceration in strangulation of the intestine. In the latter it begins on the mucous surface and extends to the outer coats. In the case of the stomach

the available evidence points to extreme distension producing splits through the peritoneal and muscular coats, perforation being staved off for a time by the integrity of the sodden and rotten mucous membrane (36). Further, ulceration does not appear to have been noted at the seat of constriction, the most common place for it in the intestine.

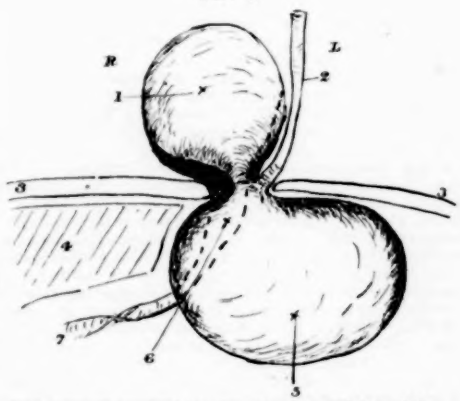
6. *Strangulation by volvulus of the stomach or by torsion of the small omentum.*—There is one form of strangulation of the stomach met with in diaphragmatic hernia of that organ which presents unusual pathological peculiarities and which has not hitherto received any attention. It may be thought that strangulation of the stomach by volvulus is rather a far-fetched idea, but it undoubtedly does occur and my attention was first directed to it by a case in which the post-mortem appearances were most unusual and their explanation apparently very difficult. Subsequently he met with a case which had occurred at St. Bartholomew's Hospital in which presumably identical appearances had been found, and from a careful consideration of the two cases the conclusion was reached that both owed their peculiarities to twists by which certain vessels in the small omentum were affected and that the engagement of a portion of the stomach in a hernial orifice in the diaphragm was a feature essential to the condition. For permission to include the St. Bartholomew's Hospital case I am greatly indebted to Mr. A. Willett under whose care the patient was admitted and to Mr. James Berry who made the post-mortem examination.

CASE 2. *Diaphragmatic hernia of the stomach; torsion of the small omentum; strangulation; death.*—A female, aged 29 years, was admitted into the Leeds General Infirmary under the care of Dr. Churton on Feb. 19th, 1901. Three months after a confinement and 18 months before admission she began to have dyspeptic symptoms. Later, vomiting after food set in and continued throughout another pregnancy which terminated without difficulty on Dec. 8th, 1900. Shortly afterwards streaks of blood occurred in the vomit and continued when the patient was not under treatment. On Dec. 15th she was poulticed for acute pain under the left shoulder. The patient was a pale and delicate looking woman and when admitted weighed 6 stones 11 pounds as against 8 stones 7 pounds two years before. Nothing abnormal was detected in the lungs. Both sides of the chest moved equally. There was a good entry of air. The percussion note was good and tactile vocal fremitus was normal. The heart's apex was felt in the fifth left interspace two and a quarter inches external to the middle line and the pulse was regular and 84. The bowels were difficult to regulate. Under a milk diet the vomiting ceased. On Feb. 21st she was allowed beef, potatoes, and rice pudding for dinner; indigestion followed and the pain became worse at 7 P.M. She vomited. At 10.30 P.M. she was much worse and collapsed, with cold hands, great pallor, and a very feeble pulse of 120. Pain was felt in the epigastrium, the left hypochondrium, and across the body over the lower ribs. Liver dulness was uncertain. There was no marked abdominal distension but there was some rigidity over the epigastrium. Respirations were increased (37) and the entry of air into the left lower lobe was decidedly diminished. Over the last four or five lower ribs on the left side in the posterior axillary line an extraordinary sound like gas or air blowing into a cavity was heard during expiration. One observer described it as "bubbling." The patient was suspected to be suffering from gastric ulcer and the rapid development of these very acute symptoms was thought to point possibly to perforation. Under this impression I was asked to see the case with Dr. Churton and though the patient's condition was extremely bad it was felt that an operation should be performed. Ether was accordingly administered and transfusion was immediately commenced. The abdomen was opened by a median incision above the umbilicus. The left lobe of the liver descended to within one and a half inches of the umbilicus. The stomach could not be seen. The colon was empty. The spleen and portion of the pancreas were easily brought into the wound. Underneath the liver, where the stomach should have been, there lay a mass of omentum which could not be drawn away. Covered by this and placed deeply near the back of the liver a very tense, globular tumour was felt. It was fixed. On teasing through the omentum it was seen to be the stomach, tightly distended, and of a bluish grey colour, and with several peritoneal lacerations of considerable size. The finger could be passed over a considerable portion of its surface without encountering any impediment. A stomach-tube was passed. The tumour disappeared at once and it was only by the presence of the tube that the whereabouts of the stomach could be detected beneath the omentum. Though there was a momentary improvement in the pulse on the relief of the distension the patient's condition rapidly began to fail and it became obvious that she could not bear the prolongation of an operation in which grave complications were certain. The abdomen was therefore closed. Five pints of saline solution had been injected into the median basilic vein. Death took place two hours later.

Necropsy.—When the body had been opened a large tumour was seen to exist in the right thorax in close contiguity with the pericardium. The tumour was the sac of a diaphragmatic hernia, was tightly distended, and as large as a very big cocoanut. It was surrounded by the lung which had been hollowed out like a cup by the tumour projecting into its base. This cup-shaped depression in the lung was the result of adaptation, not compression. Below the diaphragm and coming from behind the left lobe of the liver, which was tilted forward, was another tumour as large as that in the right thorax and tightly distended. This tumour, composed of the cardiac extremity of the stomach, was bluish in colour, deeply congested, and showed several large peritoneal cracks. The pylorus and first part of the duodenum were found on the right side of the tumour posteriorly and were quite normal in appearance. They could be traced to the diaphragm. The hernia was now reduced. The contents consisted of a small portion of the great omentum and the middle two-fifths of the stomach distended with fluid and gas. The portion that had lain within the sac was normal in colour and appearance. It was marked off from the pyloric portion, which remained in the abdomen, by a pale crease, but evidently there had been no interference with the circulation produced by the constriction of the neck of the sac.

On the other hand, there was a very sharp line of demarcation between the herniated portion and the cardiac extremity which had constituted the tumour in the abdomen. The latter showed marked signs of strangulation. Both surfaces of the fundus presented considerable peritoneal ruptures, which in some instances extended through the musculature and exposed the rotten mucous membrane. One of these perforated notwithstanding the care taken in the examination of the organ. On the internal surface of this portion of the stomach there was a hæmorrhagic erosion in addition to deep congestion and softening of the mucous

FIG. 7.



Diaphragmatic hernia of the stomach. Strangulation of the cardiac end from torsion of the small omentum. The hernial sac has been omitted. R, Right chest. L, Left chest. 1, Central portion of the stomach contained in hernial sac. 2, Œsophagus. 3, Diaphragm. 4, Liver. 5, Cardiac end of the stomach. 6, Pyloric end of the stomach (concealed). 7. Duodenum.

membrane. The mucous membrane of the herniated portion showed nothing abnormal. The protrusion had taken place through the œsophageal opening and on the right of the gullet. It had passed behind the pericardium and, carrying before it the peritoneum continuous with the anterior surface of the gastro-hepatic omentum, it had received an additional covering from the right pleura. The sac was

pedunculated and on its mediastinal side it had contracted an adhesion to the lung. Beyond the mobility of the spleen and pancreas no other abnormality of importance was found. (Fig. 7.)

CASE 3. *Diaphragmatic hernia of the stomach; volvulus of the stomach; strangulation; death.*—A man, aged 50 years, was admitted into St. Bartholomew's Hospital on Oct. 19th, 1897, under the care of Mr. Willett, in a state of profound collapse and died on the stretcher as he entered the ward. He had suffered from severe abdominal pain and almost continuous vomiting for four days until relieved by morphine. When admitted he was quite conscious and the abdomen was distended in the upper half and not tender.

Necropsy.—The post-mortem examination was made by Mr. Berry. The left lung was much shrunken and occupied only the upper half of the left pleura. There were no adhesions. Bulging into the left side of the chest and covered by normal pleura was a large nearly globular sac measuring between four and five inches in diameter. It had a broad pedicle at the inner and lower part and was clearly a diaphragmatic hernia. "Abdomen.—The peritoneal cavity contained free gas. The lesser peritoneal cavity was greatly distended and filled with a thin, nearly black, fluid looking like altered blood. This sac formed a huge globular mass

FIG. 8.

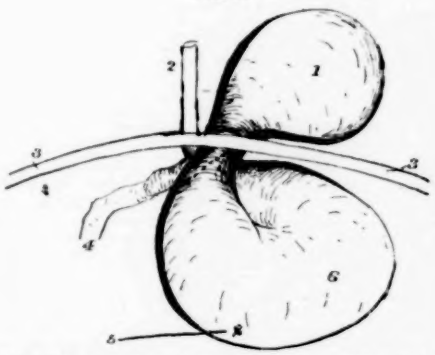


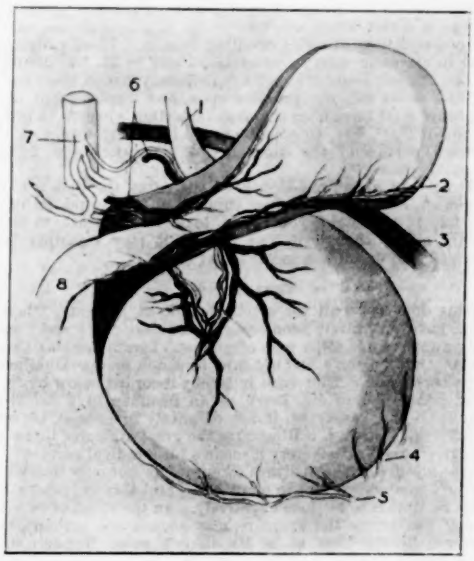
Diagram in connexion with Mr. Willett's case. Volvulus of the stomach. 1, Pyloric half of stomach in hernial sac. 2, Œsophagus. 3, Diaphragm. 4, Duodenum. 5, Perforation of (6) Cardiac end of stomach.

occupying most of the upper quadrant of the abdomen. The transverse colon ran across the lower part." "The stomach was remarkably abnormal in shape and position. About one-half of it—the cardiac end—was greatly distended, forming a rounded sac some six inches in diameter. This portion bulged into the lesser peritoneal sac above mentioned. At the lower border was a small perforation through which blackish fluid mixed with particles of food was oozing into the peritoneal cavity. A fairly well-marked and evidently old constriction separated this half of the stomach from the pyloric half which lay in the hernial sac. Nothing else but stomach lay in this sac and there was no inflammation, congestion, or other sign of strangulation. There was no fluid in the sac. When the pyloric half was drawn out of the sac the whole stomach was seen to be enormously dilated and the lesser omentum was greatly widened, being seven inches across at its widest part. A constriction at the pylorus marked the lower limit of that part that had been in the sac. The cardiac portion of the stomach was considerably decomposed and it was difficult to say whether the perforation was ante or post mortem. It seemed probable, however, that it had occurred a few hours before death on account of the large quantity of fluid distending the lesser peritoneal sac." "Diaphragm.—The opening in the diaphragm through which the hernia occurred was oval or nearly round and measured about two inches in diameter. It was situated just to the left of the œsophageal opening, the herniated portion of the stomach passing in front of the œsophageal end before entering the hernial sac. (Fig. 8.) The hernial opening appeared to have been congenital and the stomach had evidently been in the habit of passing freely into the sac for a long time. It was easily reduced by pulling and had probably often been spontaneously reduced. There was no sign of old injury to ribs, liver, diaphragm, or any other part." There was also a shrunken gall-bladder containing stones with some old adhesions around. There was no disease of any other abdominal viscus. (*Note.*—I assume that the condition of the cardiac end of the stomach described in these notes was due to strangulation.)

There is one remarkable fact common to these cases that cannot fail to arrest attention—viz., that strangulation affected a part of the stomach which had not entered the hernial sac, whilst the hernial contents themselves were quite normal and uninjured. Indeed, there was no real difficulty experienced at the post-mortem examination in expressing those contents in the first case and in pulling them out in the second. Obviously the conditions were unusual. What is the explanation? The most important factor is torsion of the gastro-hepatic omentum from right to left through an angle of 180°. It only requires a glance at Figs. 7 and 8 to realise that the right-hand portion of the small omentum must be pulled very much out of its natural position and have its relation to the left-hand portion very much altered. As a matter of fact, it is pulled across it at right angles. The right-hand border, with the pylorus and duodenum attached, in its course to the aperture in the diaphragm lies superficial to the left-hand portion of the omentum and to the coronary artery and vein. In Mr. Willett's case it passed in front of the cardiac end of the stomach and a true volvulus of the stomach was produced, but in Dr. Churton's and the writer's case, the hernial orifice being on the right side of the œsophagus and not on the left as in Mr. Willett's, this crossing of the stomach did not occur, but as will be readily understood the torsion of the omentum would be more pronounced.

Now the reason why only the cardiac portion of the stomach, situated outside the hernial sac, shows the effects of strangulation is because the circulation through the coronary artery and vein is interfered with. These vessels

FIG. 9



1, Œsophagus. 2, Right gastro-epiploic artery. 3, Diaphragm. 4, Vasa brevia. 5, Left gastro-epiploic artery. 6, Coronary and pyloric veins. 7, Common trunk of splenic artery and hepatic artery, giving off pyloric artery and gastro-duodenal artery. 8, Duodenum. In this diagram the hernial sac has been omitted and the duodenum and pylorus have been represented as in front of the central portion of the stomach. But in the two cases (2 and 3) the position of the parts was reversed.

pass underneath the right-hand portion of the omentum and the pyloric portion of the stomach and which constitute a firm solid band of tissues fixed at either end—on one side at its engagement in the hernial orifice and on the other at the attachment of the lesser omentum to the transverse fissure of the liver. The arrangement of the parts is diagrammatically represented in Fig. 9. When in these circumstances, the

pyloric portion being inclosed within a sac, the stomach becomes distended the cardiac extremity is more at liberty to expand than any other part of the organ. As it does so it must come forward and the coronary vessels get bent or wrapped round the posterior and lower surface of the stretched and taut overlying structures. The gradual interference with the circulation through the coronary vessels produced in this way speedily gives rise to further distension of the stomach generally and of the fundus in particular and the strangulation rapidly increases. But all this time the circulation to the pylorus and the portion of the stomach occupying the hernial sac is maintained by the pyloric and the right gastro-epiploic vessels which lying in the compressing and not the compressed structures are not really incommoded. It is quite possible that with increasing distension consequent upon strangulation of the fundus produced in this way the hernial contents might gradually develop so tight a constriction at the neck of the sac as to induce strangulation of the herniated portion of the stomach, but this would be a purely secondary strangulation and was not observed in either of these cases.

The writer has elsewhere drawn attention to the manner in which herniæ in other regions are sometimes associated with intra-abdominal volvulus. The present condition is only a precisely similar state of affairs, but owing to the peculiarities of the organ affected the pathological consequences are more striking and not so readily understood. The principles are, however, the same (63).

CAUSE OF DEATH.

Of the cases of diaphragmatic hernia from which this paper is compiled a fair proportion of the cases (about 1 in 8) died from conditions which apparently had no connexion whatever with the hernia. A similar proportion of cases died in utero or at birth or lived with difficulty for a few hours. There can be no doubt that the abnormality, which in many of these cases was extreme, was responsible for their feeble vitality. No less than a fourth of all the patients died as a direct result of obstruction or strangulation and the complications directly resulting from it. Three patients died in alarming attacks of dyspnœa and in all the hernia was on the left side. Though not definitely stated, there can be little doubt that the pressure upon, and displacement of, the heart must have been the most important element in producing it (2, 15, 32). One patient died from perforation of a thinned portion of the stomach wall (1) and another from tetanoid spasm (19).

Finally, in about one-eighth of the cases the hernia was accompanied by other serious injuries and it would be impossible in the majority of them to attribute death to the hernia alone, though in two (20, 47) it may certainly be affirmed that death was independent of it.

TREATMENT.

This does not call for much remark at present. These cases have very rarely been recognised before death and I am only aware of one other case of stomach hernia besides that under Dr. Churton's and my care in which an operation has been performed. That case is briefly recorded below by the kind permission of Mr. Berry, as an instance in which the condition was suspected, if not definitely diagnosed, before operation. Further, it illustrates the great difficulty there is in carrying out satisfactory measures for a radical cure.

The closure of the aperture by suture is not only likely to be very troublesome but in many cases probably impossible—that is, if it is to be done effectively. In the event of suture being unavailing the aperture may sometimes, perhaps, be covered by the liver, as in Mr. Berry's case. Though the liver would gradually mould itself to the opening and protrude through it, yet such protrusion, if it filled the gap and prevented the hollow viscera entering, would be of great value and but little, if any, inconvenience. Another plan that might be tried would be the anchoring of the stomach and the omentum to the parietes in such a way as to prevent other abdominal contents finding their way into the opening.

CASE 4. *Traumatic gastric hernia; operation; death.*—A youth, aged 19 years, was squeezed between the buffers of two trucks on Nov. 11th, 1898, and was admitted to the Royal Free Hospital under the care of Mr. Berry. He was collapsed on admission and there was superficial evidence of injury over the upper part of the abdomen, in the loin, and over the lower ribs. No air could be heard in the chest below the third rib on the left side and the left side was dull behind the mid-axillary line. Very marked pallor was a prominent symptom. There were much sickness (beginning on the third day), the vomit being coffee coloured, great thirst, and not much pain. On Nov. 15th the heart was evidently displaced to the right side, and a tympanitic resonance extended over the front of the left chest almost to the clavicle and blended below with the abdominal resonance. A bruit d'airain was heard over the tympanitic area. The breath sounds were normal over the right lung. The diagnosis lay between pneumothorax and gastric hernia.

As the patient got worse Mr. Berry operated at midnight on Nov. 16th. On opening the abdomen a large hole was felt in the diaphragm, through which about half the stomach, the transverse colon, the duodenum, half the spleen, and the upper half of the left kidney had passed into the thorax. With difficulty the parts were reduced, the stomach being enormously distended and tightly grasped, and the spleen being in two distinct halves, one in the thorax and the other in the abdomen. The hole was as large as a man's fist and was situated at the back of the diaphragm between it and the left last rib. It was very difficult to sew up, so by a couple of stitches in the liver that organ served to plug up the hole. The patient died at the close of the operation.

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Leeds.

GLOUCESTER GENERAL INFIRMARY.—The nurses' home, which has been erected in the grounds of the Gloucester Infirmary, was formally opened by Sir Michael Hicks Beach on July 23rd. The building, which has been erected at a cost of £7200, constitutes the main portion of a scheme involving an expenditure of about £10,600 for bringing the infirmary up to modern requirements. £7500 have been already received for the purpose and Sir Michael Hicks-Beach made a strong appeal for the £3100 still required.

HEART LESIONS: SOME POINTS IN THEIR DIAGNOSIS AND TREATMENT.[1]

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FROM the time of my promotion to the senior staff of the Royal Infirmary 81 cases of heart trouble have come under my observation. Two cases were admitted moribund and no post-mortem examination was obtained in either case. There were four examples of congenital disease; no points of novelty were noted. Mitral lesions were present in 39 cases; 13 presented the signs of stenosis in addition to those of regurgitation, and five, moreover, had definite evidence of adherent pericardium. In 31 out of the 39 cases there was a definite history of rheumatism. In this group three deaths occurred, two cases of regurgitation, aged 50 and 56 years, and one of stenosis, aged 21 years. Aortic regurgitation was found in seven cases; three of these were under 30 years of age and had a definite history of rheumatism; the remaining four were over 30 years of age, two had suffered from syphilis, and two showed marked vascular degeneration. There was one death in this group, a young woman, aged 29 years, who died suddenly; a post-mortem examination was refused. Combined aortic and mitral lesions were found in eight cases; four gave a history of rheumatism and four evidence of general vascular disease. The vascular cases were all in males over 40 years of age. There were two deaths in this group. The renal cardiac cases embraced 16 admitted with cardiac symptoms due to chronic renal disease. Six of these had on admission and discharge a mitral regurgitant murmur; three cases had a mitral systolic murmur on admission which disappeared and two had an aortic diastolic murmur on admission which disappeared. Four deaths took place in this group all over 45 years of age. Five cases of infective endocarditis came under notice; all died and were confirmed by post-mortem examination. In one of these the rise in temperature occurred irregularly and was only detected by taking the temperature every two hours, an important point. In another stenosis of the pulmonary valve was found, the infective lesion being a patch of acute vegetative disease of the pulmonary artery proximal to the bifurcation. This last case apparently followed an attack of pneumonia, but the infective lesion was streptococcal in nature (organisms were cultivated from the blood during life). In this group all the cases succumbed. In this rapid *résumé* the preponderance of mitral cases, nearly half the number, and the importance of rheumatism in their causation stand out prominently. These cases offer a wide field for discussion and if I must content myself with noting only a few points the limitation is made with good reason.

The possessor of a heart lesion may be absolutely unconscious thereof; on the other hand, he may present many symptoms which can usefully be classed as direct and indirect. In the former group we find various subjective sensations—palpitation, dyspnœa, and alterations in the cardiac rhythm; in the latter symptoms which for the most part are attributable to passive congestion of the various organs—lungs, liver, kidney, or brain. Yet another source, embolism, may give rise to symptoms far removed apparently from the primary lesion. It is unnecessary for me to detail the various symptoms but I shall touch upon a few to emphasise the difficulty which we shall often meet in our work.

Let us consider for a moment the subjective sensations that may be present. As you all know, they vary from the merest præcordial discomfort to the agony of angina pectoris. I should say that given a heart lesion the severity of the subjective trouble bears often absolutely no relation to the gravity of the lesion. The fatal case of aortic disease was attended with practically no pain at all. But a still more important point is this, even severe anginal pain causing collapse may occur without there being any actual heart lesion at all. These cases are not seen in my experience in hospital practice, they occur in better-class subjects, often neurotics, who are overworked, either mentally or physically. Close inquiry often elicits a history of irregular feeding and possibly excess in alcohol and tobacco, especially the latter. Rest, careful dieting, and a holiday work wonders. We are all familiar with the abnormal sensations in the chest due to gastro-intestinal disturbance and I have a vivid recollection of a patient in the ward of the late Dr. A. Davidson whose "mediastinal tumour" was removed by a few doses of Gregory's powder. A much more serious difficulty I can illustrate with a case.

CASE 1.—A man, aged 48 years, was sent to me for severe anginal attacks. His medical adviser failed to find any condition to explain them. I in my turn found the heart and vascular system quite healthy. The man was kept under observation and eventually definite evidence of nerve-root implication was obtained and finally the case was cleared up by the appearance of œdema of the left arm. A necropsy showed a malignant growth starting from the upper dorsal vertebræ.

Palpitation is another symptom which may be considered for a moment or two. Perhaps of all heart symptoms it is most often unaccompanied by heart lesions. Anyone conscious of his heart's action may be said to have palpitation; the heart's action may be unaltered or may be irregular. In either case careful attention must be paid to the apparent exciting cause. When due to severe exertion it is a physiological phenomenon, but when it appears with slight exertion some underlying state can usually be detected, such as neurosis, chlorosis, or heart trouble. It may also appear, apart from exertion, after the intake of food or emotional disturbance, and its association with gastric disturbance is well known. By far the most frequent variety is the nervous one, with a weak nervous system, whether inherited or acquired. Palpitation appears under the strain of the body changes at puberty and the menopause, or under physical or mental overwork. Similarly many cases of tea and tobacco palpitation have a nervous basis.

Is nervous palpitation due to sympathetic stimulation or vagus inhibition? In many cases it is impossible to say. In some, however, the associated vascular changes justify the implication of the former. Two cases will illustrate this.

CASE 2.—A young male neurasthenic came to the infirmary suffering from palpitation which I found to be associated with marked pulsation in the vessels, notably the abdominal aorta. This condition has been termed by Dana pulsating neurasthenia.

CASE 3.—In private I saw a young male adult who with severe attacks of palpitation had marked tachycardia and wasting. Three months' rest produced a complete recovery which has been maintained for over three years.

I always teach that the symptoms of chest mischief may be due to lesions of practically any of the thoracic organs, but it is also important to note that chest lesions may give rise to symptoms pointing elsewhere. I may be allowed to give some examples not limited to heart cases. Some years ago I collected a series of cases of pneumonia and found that one-third of the number began with vomiting. I should add that my cases were all adults. A striking case was in my ward last year.

CASE 4.—A man, aged 44 years, was admitted for cough and pain in the chest. He had suffered from a septic finger. The temperature was a septic one, a well-marked leucocytosis was present, and he had signs pointing to effusion in the left chest, deficient movement, absent vocal fremitus, dulness, and feeble bronchial breathing. A needle drew pus but operation found the pleural cavity obliterated. A necropsy a week later revealed a suppurating broncho-pneumonia secondary to an aneurysm pressing upon the left bronchus.

An important case with a direct bearing upon the point I wish to make is the following.

CASE 5.—A woman, aged 46 years, was sent to me with a history of hæmoptysis and some wasting. Her medical adviser had found evidence of consolidation at the apices. I corroborated his finding but discovered further that she had very definite mitral stenosis. No tubercle bacilli were found in the sputum and the further history has shown the lung lesion to be secondary to the heart state.

CASE 6.—Another case I well remember was sent for examination purposes some years ago as one of aortic aneurysm. I am happy to say that our Liverpool students who saw it recognised it as a case of fibroid contracting lung exposing a normal vessel.

A final case in this connexion:

CASE 7.—A woman, aged 27 years, was sent to my

[1] A paper read before the St. Helens Medical Society.

colleague, Mr. Rushton Parker, suffering from hæmaturia of recent appearance. No local pelvic cause was found and I was asked to see her. The onset had been attended by sharp pain in the loin and her heart showed definite evidence of mitral stenosis. The hæmaturia was then of embolic origin and disappeared after a week's rest in bed. I might say the patient was not aware of her heart trouble.

These are a few striking cases and I have no doubt you could multiply examples from your own experience. The point which I wish to make is then that nothing but a careful physical examination will enable us to disentangle the various chest lesions.

I have often been struck with the method of heart examination practised before inducing anæsthesia. An ear applied directly or with the aid of a stethoscope settles the question of heart soundness in an instant. The matter, however, is not nearly so simple. I suppose the diagnosis is based on the absence of a murmur with a regular rhythm. Now when valvular trouble is present good compensation makes it no bar to anæsthesia and in my earlier days I have given even chloroform in such cases without mishap. On the other hand, a murmur is not sufficient evidence of valvular trouble. It would lead me too far to discuss the whole question but I would remind you that a murmur depends largely upon the speed of the blood current. I am sure that some murmurs heard when the heart is beating very rapidly in excitable subjects are due to this factor alone. The opposite pole will be accepted, I think, by all—viz., that when the heart's action becomes weak murmurs often disappear; this I take it is the probable explanation of the murmur being absent in some cases of mitral stenosis. Again, when a murmur is present the question will often arise, Is it functional or organic? I am accustomed to teach that with no enlargement of the heart downwards or to the left, no accentuation of the pulmonary second sound, with the left ventricle first sound sharply defined, and a systolic murmur loudest at the pulmonary area, then in the presence of anæmia a diagnosis of hæmic murmur is justifiable. However, in some cases a mitral murmur is heard with an accentuated pulmonary second sound and yet we are in doubt. I have just had an interesting case in my ward which will show the difficulty that at times may arise.

CASE 8.—The patient was a girl, aged 19 years. She was anæmic but nutrition was fair. The temperature was 101° F., the respirations were 24, and the pulse was 110. There were some redness, tenderness, and swelling of the right foot. The blood count gave the following result: hæmoglobin, 60 per cent.; red cells, 4,800,000 per cubic millimetre. The apex beat of the heart was in the fifth space, three and a quarter inches from the median line; it was strong, regular, excited; the dulness was within normal limits. The left ventricle first sound was sharp and followed by a systolic murmur, which was not conducted to the axilla. The pulmonary second sound was accentuated.

It is generally accepted that some cases of functional murmur are heard best at the mitral area and if weakness of the muscle ring be accepted as the cause thereof the increase in the pulmonary second sound is readily explained. I decided in this case, although rheumatism was present, that the murmur was functional and I did so because the first sound was so well defined. Within a week the murmur had vanished, so that the diagnosis of relative incompetence was probably correct.

The variety of valvular disease in which murmurs are most often absent is mitral stenosis. The following considerations will guide us in such a case. 1. Evidence of an enlarged right heart: displacement of the apex beat to the left, systolic heaving of the sternum with epigastric pulsation, and extension of cardiac dulness to the right of the sternum. I assume that the lungs have been examined. 2. A diastolic shock in the third left space will give evidence of high tension in the pulmonic circulation. Good observers have stated that a presystolic shock can in some cases be made out in the upper and left part of the cardiac area. I cannot say that I have ever seen it and as it is ascribed to the pulsation of the auricle I do not expect to see it, for I have never made a post-mortem examination in which the left auricle has formed part of the anterior surface of the heart. 3. A presystolic thrill may be present even in the absence of a corresponding murmur. The shock of the closing mitral valve may be detected as an abrupt sensation synchronous with the first sound and by Bard and Cassan is considered to be an absolute sign of mitral stenosis. 4. The left ventricle first sound is often altered in characteristic fashion, becoming hard and sudden—I call it "thudding." At the base the pulmonary second sound becomes markedly accentuated and persistent reduplication of the second sound is a good sign of the lesion. 5. Preceding the first sound at the apex is sometimes heard a dull rumbling sound which may end in a murmur before the first sound becomes audible, the *roulement diastolique* of French writers. The pulse is usually small, regular, and of fair tension. I have a case in my female ward at the time of writing which shows practically all these points. Yet another case:—

CASE 9.—The patient, a female, aged 26 years, was in my ward in January, 1904, with mitral regurgitation. She was readmitted on March 20th with marked loss of compensation, as shown by œdema of the legs, some ascites, right hydrothorax, with orthopnœa and cyanosis. The mitral murmur was absent on admission but became audible in the course of 24 hours after a full dose of digitalis.

It is obvious, then, that the most careful physical examination is necessary to make an accurate diagnosis in chest cases. The scheme which I adopt for the heart is the following:—1. Inspection of the præcordium. 2. Apex beat: position, extent, strength, character, rhythm, thrills, mobility, abnormal impulses. 3. Heart dulness: change of absolute dulness with full inspiration. 4. Heart sounds: strength, character, relative intensity, rhythm; added sounds. 5. Murmurs: site of greatest intensity, time, lines of conduction, and character. The examination is completed by the investigation of the arterial pulse, venous pulse when present, also liver and capillary pulses, and further assistance is obtained by considering the symptoms and physical signs in the organs secondarily affected. In this way we can usually determine the existence of a heart lesion, but, as Peter has well said, this is merely an artistic satisfaction; a musician could arrive thus far; it takes a sound medical practitioner to make a diagnosis on which prognosis and treatment may be based.

Time will not allow me to enter into the causation of heart disease but the nature of our problem may be illustrated by a case.

CASE 10.—A male, aged 50 years, was admitted into Ward X. for pain in the chest, dyspnœa, and cough. Physical examination detected an enlarged heart; the apex beat which was displaced downwards and to the left, was slightly diffuse, strong, heaving, and regular. There was some dulness in the inner part of the second right intercostal space. The left ventricle first sound was prolonged and muffled; the aortic second sound was musical and accompanied by a short "whiffy" diastolic murmur. The pulse was rather short (collapsing) and the radial artery was greatly thickened and tortuous. The diagnosis of hypertrophy of the left ventricle with a little dilatation, dilatation and atheroma of the aorta, and slight aortic regurgitation was readily made. It was further noted that the urine was of low specific gravity (1007), although deficient in amount, and contained a trace of albumin. The history revealed some renal dropsy, puffiness of the eyelids in the morning and of the ankles at night, of some duration, and, further, that for some years the patient had been obliged to get up at night to micturate. It was evident that the man had chronic renal disease and we had to decide upon the nature of the aortic valvular trouble. Murmurs in renal disease may be hæmic, due to relative incompetence, or the result of actual valvular changes. A diastolic murmur is practically never hæmic in origin, so that we were left with the two latter. It was quite possibly a relative murmur inasmuch as there was evidence of dilatation of the aorta but, so far as I know, there are no physical signs to help us in our decision. The course of the case will often decide and in this case it did so. The patient was kept in bed, his fluid intake was lessened, and in the course of a few days the murmur disappeared; it was therefore a murmur of relative incompetence and not one due to valvulitis.

It would be impossible to notice all forms of heart lesion in which difficulty arises but I should like to mention one other—viz., adherent pericardium. I do so for two reasons—one being its importance in prognosis and the other its bearing upon the diagnosis of mitral stenosis. This latter point was impressed upon my mind a good many years ago by the following case:—

CASE 11.—A young woman, whose age I have forgotten, was in the infirmary with evidence of heart failure, with presystolic thrill and murmur. Ascites was out of proportion to the œdema of the legs. She died and the post-mortem examination revealed general adhesion of the pericardium,

with calcification and absolutely no mitral stenosis. The specimen is in the Liverpool University museum. Since that time I have learned to pay less attention to murmurs and more to the other signs of valvular trouble and it has repaid me.

The point which I want to emphasise is this. In a valvular case, especially one of apparent mitral stenosis, always look for the evidence of adherent pericardium and be cautious in affirming the presence of mitral stenosis when such evidence is present. Inflammation of the myocardium and pericardium, pancarditis, is much more frequent than is usually believed. In my opinion the diagnosis of adherent pericardium can only be made when there is thickening in the mediastinal tissue, mere adhesion of the pericardial layers giving rise to no symptoms of any diagnostic value. It will be readily understood, therefore, what an important bearing mediastino-pericarditis will have on prognosis. It is, however, often a difficult matter to speak positively about. The points are as follows: systolic retraction of the intercostal spaces in the region of the apex of the heart; systolic retraction of the left lateral and posterior part of the thoracic wall; diastolic rebound in the lower præcordium: non-alteration of absolute cardiac dulness with respiration; fixity of apex position with alteration in decubitus; diastolic pulsation in the veins of the neck: and pulsus paradoxus. The fixity of the apex site is perhaps the only absolutely unequivocal sign of the condition. The disproportionate amount of ascites is a sign of some importance especially in young subjects, and often perihepatitis is found in association with it, the Zuckerguss Leber of the Germans. My old teacher, Dr. F. T. Roberts, taught me that the apex beat often had a curious character, which he aptly termed embarrassed, and I have found this sign of service.

The character of the cardiac enlargement is often of service in deciding how far any single lesion will suffice in satisfying the probabilities of causation. One or two points are of service in considering this. When the myocardium is weak dilatation rather than hypertrophy is the result of any increased work thrown on the heart and may if the strain be sudden and the heart is already diseased lead to fatal cardiac failure. Some years ago I saw a case with Mr. W. T. Clegg of Liverpool and within a few days was summoned to a second by him. Both were cases of gall-stone: the first had a sound heart and recovered and the second, who was the subject of mitral disease, died before I reached the patient's house. Potain taught that the tendency to syncope attending gall-stone colic was associated with dilatation of the right heart, and François Franck has shown experimentally that strong stimulation of the bile-duct causes a reflex rise in the pulmonic blood pressure. In this way the difference in the issue of the two cases becomes clear. Another point of value is the general rule that when a cavity of the heart is subjected to strain during its diastole dilatation is the primary result. On the other hand, when the strain occurs during systole then hypertrophy follows. In the first case, if time be allowed hypertrophy follows, and in the second sooner or later dilatation. For example, the high tension of chronic renal disease opposes the systole of the left ventricle and we find typical hypertrophy; in aortic regurgitation the strain meets the ventricle in its diastole and dilatation follows. This, with the secondary hypertrophy, gives us the well-known cor bovinum.

Before considering the question of treatment in heart disease which I shall limit to valvular lesions I must say a word or two on prognosis. There is little to be gained by tabular statements as to the gravity of the various valvular lesions, each case must be gauged on its own merits. Aortic regurgitation is usually regarded with great dread as a cause of sudden death. In my cases I have only met this accident twice, and as one patient had septic endocarditis I should say, perhaps, only once. In this case, that of a young woman, aged 29 years, no necropsy was allowed and I cannot say whether any other lesion was present. I mention this because in another case of sudden death in aortic regurgitation in which as pathologist to the infirmary I made the necropsy I found that the cause of death was the rupture of an aneurysm of the intra-pericardiac aorta into the pericardial sac. Myocardial lesions, too, may cause sudden death.

The nature of the lesion must be determined in order to make the diagnosis, the history considered with care, and the examination of the patient may give the clue. I have a patient in my ward as I write with aortic regurgitation in whom an attack of pneumonia seems to have been the exciting cause. Post-pneumonic valvulitis is said to be usually aortic in site. I might mention that, according to French writers—Troisier, Teissier, and others—cases of mitral stenosis occur in which the tuberculous toxin is the exciting cause. In only one of my 13 cases does this seem the probable sequence of affairs.

The degree of the lesion is the second point. In regurgitant lesions the presence or absence of the corresponding sound will help but the main guide is the alteration in size of the heart. It cannot be too carefully borne in mind that loudness of murmur is no guide to degree of lesion.

The compensatory changes come next. When we find them adequate to the new condition the bearing upon prognosis is obvious, but when they have failed the problem is a little more difficult. We have now to consider whether compensation has failed on account of some special strain or because the reserve force of the myocardium is finally exhausted. In some cases only the result of treatment enables us to decide this question.

Finally, the general history and condition of the patient and his hereditary tendencies will give assistance in settling, so far as human skill can do so, the outlook so important to the patient. I need hardly say what importance the social status bears in regard to this matter of prognosis.

To turn to the second division of my subject I find the following subdivision of cases of service in outlining the treatment: (1) compensation practically equal to the lesion; (2) compensation only equal to the lesion when the patient is at rest; and (3) compensation unequal to the lesion.

(1) Should the patient in the first subdivision be informed of his trouble? I believe myself that this is always a wise procedure, otherwise it is difficult to get the necessary mode of life carried on. In general terms we must warn him against excess of all kinds, mental as well as physical. It is not necessary to forbid exercise in moderation; cycling and so on are permissible as exercise but not in competition. If cycling be indulged in care must be taken not to struggle against head winds or up-hill. Moderation in the use of alcohol and tobacco must be enjoined, abstinence even being advisable. General dietetic and hygienic measures should be borne in mind. I might add that even in this stage in mitral stenosis there is the risk of hæmoptysis or embolism. The treatment I have found most useful in hæmoptysis is a free saline purge, with a dose of opium. Are such lives insurable? I suppose most offices would reject aortic cases but would accept mitral cases with an addition to the premium. For my own part I should not advise acceptance, but when such a case comes for report make it a rule to give a full report on the lines I have sketched and leave it to the office to decide. My reason for refusal is the impossibility of foreseeing accidents, such as infection.

If the patient is a female, what should be our advice, if asked, as regards marriage? The less common form, aortic trouble, is a bar to matrimony. Well-compensated mitral regurgitation cases often pass through pregnancy without trouble; in stenosis cases, although the same favourable course is possible, yet at times grave symptoms arise and notably attacks of tachycardia or acute œdema of the lungs. If pregnancy occurs in a case of mitral stenosis the patient should be kept under observation and the slightest sign of distress should be actively treated. Limited diet, free action of the bowels, with possibly bleeding in the more threatening cases, will sometimes ward off the necessity for terminating the pregnancy. Our advice should certainly be against marriage.

(2) In the second subdivision we find cases in which palpitation, præcordial pain, and dyspnœa are manifest on exertion, and in a more advanced degree some passive congestion and its results in the kidney and liver. In aortic cases throbbing in the neck vessels, headache, and giddiness may be troublesome. Absolutely the best treatment is a week in bed with limitation of fluid and regulation of the diet and moderate purgation. A belladonna plaster often gives relief, whether it acts medicinally or psychically matters little. In aortic cases I have found bromide and iron give relief. General tonics, iron, strychnine, and the like, with perhaps small doses (from two to three minims) of tincture of digitalis where rest cannot be taken will help to put our case into subdivision (1). It is of great importance to determine the nature of the valvular lesion: Is it associated with vascular and renal disease or is it purely cardiac? The tension of the pulse and the state of the artery are valuable guides to treatment; when the former is high and the latter shows signs of disease a rigid milk diet coupled with diuretics

acting on the kidney, such as the xanthin derivatives and the use of some mineral water, will help to lower vascular tension by eliminating toxins.

(3) The case of valvular disease, whether aortic or mitral, which reaches hospital suffering from the signs and symptoms of failing heart needs little description. The heart chair to maintain the trunk upright is often necessary. I need not dilate on the necessity for care in feeding but would simply say that limitation of fluid is often of great service. The bowels may be gently acted upon. Sleeplessness is often a troublesome symptom in mitral cases attended with marked mental depression. In aortic cases excitement and even maniacal attacks may be present; I have seen one case of violent mania in aortic regurgitation. The modern hypnotics—trional or sulphonal and paraldehyde—sometimes suffice but opium is our safest anchor. I have never forgotten a case of heart disease in a young subject which was admitted to the infirmary when I was a house physician. Apparently all our efforts had proved futile but opium before food was ordered in the form of liquor opii sedativus and liquor pepticus after food. The girl forthwith began to mend and eventually was able to leave the hospital in very fair condition. I have seen good service rendered by the old pill of squill, digitalis, and mercury when the engorgement of the stomach and liver has been marked, and blue pill is the well-spoken-of remedy of many sound practitioners. Should we use digitalis in aortic cases? The answer to this is not quite simple. When we find thickened arteries and possibly some increase of tension in the radial pulse, placing the case in what Huchard and his pupils would call the cardio-vascular class, there is no doubt that the best line of treatment is to limit fluid intake, open the bowels, and give renal diuretics. If direct cardiac stimulants are used I prefer strophanthus. As common practice in these cases I give strophanthus through the day with a dose of agurin night and morning. Even in these cases, however, when the pulse tension is low, digitalis is demanded, and I have no hesitation in giving it to an aortic case when the mitral valve has yielded. Trousseau's diuretic wine is a good remedy in similar cases. When digitalis cannot be taken by the mouth the hypodermic use of digitalin will often start the case on the way to convalescence. I need hardly say that in some cases œdematous fluid will have to be removed by instrumental measures; this especially applies to the accumulations in the serous cavities. Dyspnœa is often improved by the use of atropine and strychnine hypodermically. The sinking sensation so often complained of by cardiac patients in the later stages can be alleviated by the exhibition of solid opium or neat brandy.

Liverpool.

THE RELATION OF INEBRIETY TO INSANITY AND ITS TREATMENT.

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THERE are several groups of alcohols in which the physiologist and the physician are interested and these vary from the monovalent alcohols, such as ethylic, propylic, and amylic alcohol through cholesterine, glycerine, and cellulose to the pentavalent phenols and other aromatic compounds. Speaking generally, from their action upon man only the monovalent group concern the subject of our consideration. The effect of alcohol upon living protoplasm has been carefully studied by competent workers and the literature of the subject is full and extensive. Alcohol stops the germination of spores and grains and when the proportion of alcohol exceeds 20 per cent. in the material undergoing alcoholic fermentation further action is stopped, so that this quantity of alcohol becomes lethal to its own development and all further fermentation is arrested. Alcohol is a dys-osmotic and when ingested it passes with difficulty through the living cellular membrane of the capillaries into the tissues. It causes a reaction on the part of these cells which in consequence proliferate and the capillary walls thicken, in this way not only depriving the special organs of their necessary nutriment but also retarding the excretion of waste material which thus accumulates in the tissues and interferes with their healthy and normal functions. It is this accumulation of effete material which has given rise to the view that poisoning from alcohol is not a direct toxæmia but an indirect one from the production and the accumulation of leucomaines. It is further known that alcohol is a strong dehydrating agent, and as dehydration is as hurtful to protoplasm as superhydration, and as a fixed amount of water is therefore necessary to healthy protoplasm, indeed more necessary for protoplasm than is oxygen—for oxygen cannot reinvigorate dry protoplasm—this dehydrating action of alcohol upon protoplasm is highly injurious. The effect of alcohol upon protoplasm is to paralyse irritability, diminish sensibility and contractility, and when sufficiently concentrated to suspend the action of all ferments. The experiments of Féré upon incubating eggs also show the evil influence of alcohol upon the metabolic, the motile, and the reproductive functions of animal cells.

The causes of inebriety.—It has often been asked, "Why do men drink?" There are probably different reasons among different classes in the social scale. The rich drink for artistic and æsthetic reasons—a good meal is made a better meal. The poor drink in order to get a good meal. It is believed that the stimulation—mistaken for nutrition—is more easily obtained from drink than from a meal, which is more expensive, more difficult to select, to prepare, to cook, and to serve. The poor also get light, warmth, comfort, and society in the public-house. Poverty itself is a cause of drink and drink helps them to forget their human misery, but I believe drink is more often the cause than the effect of poverty. It calms physical and moral pain and the pleasure obtained becomes a customary want. The rapid increase in the volume of wealth and the profits of trade make it easier for the mass to obtain alcohol and there is in many instances a temptation (through facility of access to it) from the number of public-houses. Lastly, there is no doubt that the hurry, the artificial desires, and the quest of pleasure characteristic of civilisation favour drinking habits in both men and women.

Physiological effects.—Alcohol brings about marked degenerative changes in the nervous, muscular, and glandular tissues. Its action is a structural one, and change of structure implies altered function. We find these altered functions manifested in commencing intoxication, when the ideas flow with unaccustomed facility, words are uttered more freely, and language becomes more expansive and confiding, cares vanish, everything seems more full of attraction, and the world seems better. There is a sense of *bien-être*, the eye is kindled, and the visage and the physiognomy are illumined; but this picture soon falls into shadow, for the ideas soon become dissociated, the intellect pales, and words become a vertiginous whorl. The memory becomes affected, the gaiety and the optimism of the previous stage are replaced by sadness, tears, and a querulous or dour disposition; all the senses are overshadowed and the mind ere long becomes a listless chaos without order or purpose. The higher psychic faculties disappear in the order of their importance, there is loss of prevision and judgment, there is failure in the concentrating or focussing power of the mind, and the memory and the attention are both enfeebled. Alcohol attacks first the hierarchy of the organic functions, those which are in the front rank, and they are affected in the inverse order of their development, those last developed being the first to surrender; inhibition or self-restraint—the reserve characteristic of the self-respect of higher man—being first withdrawn. The initial flush of excitement referred to above is readily explained upon physiological grounds by the effect that alcohol exerts upon the capillaries which undergo initial dilatation and subsequent paralysis. The intellectual exaltation noticed has no bearing or relation to genius; it is merely a suspension of the highest faculties which permits the next highest to rise into prominence; it sets free the shackles and removes the veil from a less highly evolved mental plane, and free play is given to the uncontrolled feelings. The effect of alcohol is to stimulate the desires whilst diminishing the power to gratify them. It creates a false feeling of strength which when taxed is not sustained, and alcohol is dissipative rather than conservative of energy. The extension of the effect of alcohol to the motor areas is characteristic and the final stage of complete muscular paralysis is well known as occurring in the wake of unsteadiness, the gait of the inebriate being too familiar to need description. Coexisting with the

mental changes are those material ones in the nervous system, the muscular and the glandular tissues. Alcohol in large doses has been proved to cause changes in the pyramidal cells of the brain. It destroys the fine processes of the cells which swell from degenerative changes; their outline is altered and the nucleus is displaced or extruded. Fatty changes are produced in the voluntary and the involuntary muscle fibres and also in the different gland cells which in consequence alter the metabolism of the organism. An increase also takes place in the amount of fibrous or cicatricial tissue both in the blood-vessels and in the various secreting glands, so that malnutrition is induced and a lowered resistance to disease occurs which reduces vigour and diminishes vitality. As to the increase of fat in the body, the statement is not maintained that alcohol itself is consumed to supply the energy which is normally obtained from tissue changes. Alcohol exercises no "protective oxidation" over the body. On the contrary it interferes with the building-up process by forming a compound with the hæmoglobin of the red blood corpuscles which takes up and parts with oxygen less readily than normal hæmoglobin. The accumulation of fat is due to a general diminution in the metabolism of the body and to an accumulation of waste matter which should be excreted. This accumulation of fat is in part an active degeneration as well as an infiltration and it can be proved to be at the expense of the higher protoplasm, for it can be measured by the increased elimination of nitrogen. Fatty infiltration and fatty degeneration are characteristic features of acute alcoholic poisoning.

Mental effects.—The mental effects of alcohol differ as to whether they are induced by one large dose, as occurs in alcoholic poisoning or in ordinary drunkenness, or whether they are the result of long chronic drinking, even when this is done in what is described as "moderation." It is a curious fact, but one well known and appreciated, that the mental symptoms of chronic excessive alcoholism may, and sometimes do, result from long-continued moderate drinking, more especially if the person is overtaken by a serious illness or a severe mental shock, also if the drink be spirits. The tendency to the development of illusions, upon which are based delusions of a persecutory nature, is very common in persons who drink alcohol to excess; indeed, it is not too much to say that persons who become insane and whose symptoms present visual illusions or delusions based upon them, or whose delusions are grandiose, boastful, and vain-glorious, or relate to sexual perversions, such as marital infidelity, or are suspicious, distrustful, and persecutory in their character, are almost invariably directly or indirectly caused by alcohol. It is almost without exception that when delusions are present as the result of excessive alcohol they are of a malignantly fearful and persecutory character. These facts supply a reason for the classification of alcoholic insanity as hallucinatory or delusional. Both varieties tend to terminate in dementia which indeed may be the only form, the patient becoming dull, weak-minded, and listless, leading a purely vegetative and automatic life from the onset.

Much confusion has resulted from the careless use of terms in dealing with the effects of alcohol. Alcoholic insanity is often used as a generic term and is simply defined to be a mental perversion for which alcohol is the prime cause. It is often difficult to separate those cases which are *mad* from those who are "*bad*" as due to the same cause. Both these forms may be seen in prisons, reformatories, as well as in asylums. The forms of mental disorder resulting from alcohol are therefore (*a*) gross dementia, (*b*) maniacal, unrestrained excitement due to hallucinations, or (*c*) permanent delusional states. It is often not the quantity imbibed but the susceptibility of the brain and nervous system through inherited or other vice which determines whether a given case shall be considered a lunatic, an inebriate, or a chronic drunkard. It is well to avoid a definition of insanity, but the Inebriates Act of 1879 lays down a legal definition for the inebriate or the chronic drunkard and it is as follows: "Any person who is by reason of habitual intemperate drinking of intoxicating liquor *at times* dangerous to himself or herself or to others, or incapable of managing himself or herself and his or her affairs." The Secretary of State is advised that intoxicating liquor "may include liquors other than alcohol if their habitual intemperate use brings the consumer into the condition of an 'habitual drunkard.'" A distinction has also been drawn between "drunkenness" and "chronic alcoholism." The latter term is used by the Registrar-General in his statistics of mortality, whereas the former is used in furnishing statistics of crime and for police-court purposes. There may be considerable chronic alcoholism either among a group of persons or in individuals such as licensed victuallers, barmen, brewers, labourers, and those in general employment by the trade, or among a special class such as commercial travellers, and yet very little chronic drunkenness. The vulnerability or the susceptibility of the various organs is a deciding factor in this classification.

As to insanity in relation to crime, the statistics of medical officers of prisons throw much light upon their close connexion. At Aylesbury and Warwick, the two State reformatories, most of those under detention are inherently mentally defective. They are sent there, in the first instance, after an attempt has been made and failed to make them amenable to discipline. They are habitually sullen or unreliably excitable and they vary in their conduct from one hour to another. They are suspicious and ready to take offence when none was intended. At the same time they are free from hallucinations or delusions, their special features being a low intellectual capacity and their inability to follow a train of reasoning or to behave reasonably in daily life. They are creatures of impulse and are not amenable to method and order. The relation of crime to insanity is demonstrated by the fact that in 64 per cent. of the women there was a history of insanity and that 25 per cent. of the males who left Warwick and 33 per cent. of the females who left Aylesbury were transferred to asylums for the insane.

Of all the special symptoms characteristic of forms of alcoholic insanity the condition termed "paramnesia" is the most indicative. This is a failure of memory for recent events, an impairment of that special adhesive quality of nerve cells by which the brain is able to retain the images of past sensations and in consequence of which there is a marked loss of the power of associating ideas. The person is lost and confused, he often brings the long past into the present, he is busy with previous plans, makes imaginary journeys, and has just seen old companions or acquaintances. It is this feature in drink cases, this forgetfulness and confusion, which makes men and women (especially the latter) appear so inclined to distort the truth and to appear to be given to somewhat deliberate and shamefaced lying. They are unable to retain impressions of their own statement and those of others and they are incapable of concentrating and fixing their attention upon passing events. It is this failure of memory which causes self-contradiction. There are also in these cases a busy delirious restlessness and a mental wandering, causing a loss of "orientation," as it has been called, the patient being confused as to time and place. Another peculiarity of chronic drinkers is the impulsiveness of all their reactions when excited; often their reaction to sensory, visual, and auditory stimuli is retarded, but when they do react they are impetuous and essentially spasmodic and convulsive in character. Patients of this class are almost always irritable, sudden, and violent, their temper is unrestrained, and licence in speech and action often becomes apparent in their conduct. In one particular class of chronic drinker the moral nature is much perverted, the will-power or the inhibition is weakened, but there still remains the knowledge of right and wrong and under a sufficiently powerful stimulus there is power to abstain from alcohol; ordinary motives may have no influence and an appeal to reason is quite ineffective. The conduct, although bordering upon insanity, is in fact reasonable, except upon the question of drink, the craving for which exercises a complete domination over the individual, who is now called an inebriate. Inebriety is of two kinds, one characterised by intermittence seen in the periodic drinker and the other in the constant or habitual toper. The former occurs most frequently in young persons generally between 20 and 30 years of age. When the victims are women it not infrequently occurs about the period of menstruation. The periodic drinkers are generally of unstable parentage and come from a faulty stock affected with some neurosis and evidenced by a history in the ancestors of either drink, epilepsy, insanity, or neuralgia. After an outbreak of drinking the victims either become exceedingly despondent and suicidal or they may become violent and frenzied from delirium tremens which occurs mostly in this class. These conditions pass off after a time to be again repeated, but in the intervals of drinking they are agreeable and reasonable and are heartily sick of their own loss of self-control. They are penitent and they promise amendment; indeed, they may loathe the very sight and smell of drink. In these intervals

they probably fulfil their natural obligations to those dependent upon them and to society. In these cases also large quantities of alcohol may be imbibed during the drink period without any of the natural physiological effects such as drunkenness or motor paralysis usually seen in the ordinary drunkard. The so-called constant drinkers, on the other hand, are persons usually in later life, and it is these who, before the Act which came into force on Jan. 1st, 1903, disgraced our streets and public places and contaminated our youth. These are morally and intellectually depraved persons who are unfit to associate with decent human beings. They are a reproach to their friends and a by-word of opprobrium and contempt to their neighbours. No amount of persuasion in regard to the evil effects of drink appears to have any influence in preventing persons in either of these two classes from drinking and no argument as to their deadly course is of any avail. They must have their drink even if it pauperises them or makes them the associates of low persons and criminals or even if their families are ruined by it. The pleasure to themselves has become a customary want and must be gratified.

Motor symptoms.—Alcohol induces epilepsy, especially in those who have suffered head injuries, and I have known several cases in which, when the alcohol is stopped, the fits have ceased, reappearing when further indulgence occurs. All drinkers become subject to sensori-motor disturbances and tremors, the lips, the hands, the voice, and the parts most subject to stress being the first affected. It is among the skilled craftsmen whose evolutionised movements do high-class manual work that alcohol plays a havoc and the distress which falls upon those dependent upon these is too well known to need discussion here.

Sensory symptoms.—Owing to an affection of this territory of the nervous system cramps and loss of sensation in the extremities—and most often the legs—are frequent symptoms of alcoholic indulgence. Visceral and other hallucinations are common and complaints as to electricity and machines are quite frequent. The lesions in this form are in the main peripheral, they are also mostly bilateral and tend to be centripetal. As to the pathological cause of disturbed sensation, it may be the direct anæsthetic effects of alcohol acting peripherally upon the terminations of the sensory or motor nerves; it may also be a direct effect upon the cortical neurons which are the central representatives of these projections.

Susceptibility.—We are unable to foretell definitely the particular group of neurons likely to suffer in any special case of alcoholic indulgence, neither can we give the progress of the symptoms when a group of neurons has been attacked. This fact demonstrates the existence of a *locus resistentiæ minoris* for each individual. We know that some persons break down from arterio-sclerosis, thrombosis, hæmorrhage, and softening, others from a fibrous infiltration of the glandular structures, and others again from mental or nervous lesions. We know, for example, that syphilis in the parents may be evidenced in one or more of the immediate descendants whilst the other children escape altogether. In many cases all the children may escape stigmata. In some we find locomotor ataxia in the father developing general paralysis in the son and *vice versâ*. What it is that constitutes the immunity in the one case and the susceptibility in the other we do not know. We do know, however, that alcohol has an affinity for the highest developed functions—both mental and physical—and that stress of a particular organ renders that organ more vulnerable and more liable to surrender. For instance, alcoholic peripheral neuritis has been known to occur in the right arm of a barmaid, whilst the lower extremities have escaped entirely. This susceptibility or the personal equation of the individual is a dominant factor in the incidence of disease other than the result of alcohol.

General results of alcohol.—In chronic alcoholism the effects produced possibly bear more relation than is usually accepted to the form of alcoholic mixture taken and the deleterious effects of spirits are combined with those from a category of mixed poisons; the amylic alcohols in crude whisky—most of which is now prepared, not from malted barley, but from molasses, rice, or maize and which is served in a raw state—probably have a more injurious and a different effect from that of the lighter wines. Such a poison as absinthe, mixed and served with raw spirit, must have a hurtful influence of its own in addition to that from the manufactured and inferior spirit. Richet states that the more volatile the spirit the more marked are the anæsthetic effects of alcohol; the less volatile it is the more marked are the convulsive effects; and that the more soluble in water the alcohol may be the more marked are the inebriating effects. I should like to hear this question of the influence of different forms of alcohol upon the individual further discussed. I am of opinion that among the poorer classes, whose beverage is mostly beer, there is considerable malnutrition found as the result of beer-drinking which induces gastric catarrh. The beer undergoes further fermentation when ingested, the lower forms of bacteria develop and multiply, and the formation of foul gas causes dilatation of the stomach and dyspepsia; this gastric and intestinal irritation, which is more marked than the glandular cirrhosis caused by spirit-drinking, often gives rise to wasting and diarrhœa, with a lowered vitality.

The evil effects of alcohol may readily be seen in the subjects of surgical operations who are beer-drinkers. Their wounds take long to heal and they are subject to many unfavourable complications. The mental defects in beer-drinkers are those of general impairment and dulness more akin to dementia than the perversion, the suspicion, the cunning, and the delusions so commonly found in spirit-drinkers. There is no doubt that one of the chief results of alcohol is a tendency to fatty degeneration and to diseases such as pneumonia and tubercle, to skin eruptions of various kinds, to laryngitis, atheroma, motor and sensory disturbances, and also to the various neuroses and crime. It is a significant fact that during the ten years of which I have had experience of the London County Asylum at Claybury out of a total of nearly 10,000 persons admitted over 22 per cent. of the men and 13 per cent. of the women owe their insanity directly or indirectly to the effects of drink. That alcohol is a poison to the whole animal series is without doubt and that it shortens life is strongly evidenced by the careful statistics of life insurance societies.

Heredity.—There can be no possible doubt, indeed I may say there is general agreement as to the opinion, that alcoholic excess devitalises the individual, both directly and by the influence of a vitiated environment. How far this is transmitted to the descendants is a very vexed question. That parental intemperance is a large factor in the deterioration of the offspring, both mentally and physically, is the opinion of many experts. Whether it is the predominant factor in any definite case is uncertain, for intemperance may be the result of an insane heredity; in such a case it is possible that insanity or some allied neurosis may be the chief cause of the deterioration. Heredity is as characteristic of alcoholism as it is of any other form of moral insanity. It occurs in about 33 per cent. of all cases of alcoholic insanity. Various kinds of neuroses may be found in the family history of almost every inebriate and this condition tends to predispose to inebriety in those who taste and partake of alcohol. Further, I am able to affirm from an extensive experience in a large asylum that the offspring of the drunkard is often a degenerate and a psychopath—a class which is most susceptible to the influence of alcohol. They are more liable to suffer also from delirium tremens and violent mania after taking alcohol, even after a single debauch, than the drunkard without heredity who, on the other hand, suffers more often from cirrhosis of the liver and kidneys and is sent to the hospital for treatment, whereas the psychopath or neuropath with an insane heredity is sent to an asylum. I believe in the transmission of acquired characters but the deductions of morphology, laboratory experiments, and microscopical observations are against this belief. It has been long pointed out[1] in the vegetable kingdom that an alteration in the environment of plants can bring about variations and when the cultivator repeats the conditions which cause these variations the latter become fixed and are inherited. Precisely in the same way does the inductive evidence from observation and experiment afford us knowledge as to the animal kingdom; the alcoholic environment is capable of bringing about a modification in the offspring as is seen in the attenuated neurotic children of many drunken parents. As having a special bearing upon this aspect of the transmission of acquired characters may be mentioned some unpublished experiments of Dr. G. A. Watson who injected guinea-pigs with ricin and created an acquired immunity to 1000 lethal doses in the immediate offspring. In the face of such results it is not too much to be quite certain that alcohol in the parent affects the offspring. Furthermore, in the vegetable kingdom we know that Alpine plants have a certain "facies," they are stunted in size but brilliant in bloom, and moist tropical flora,

[1] Henslow: Royal Horticultural Society, 1904.

together with the flora of the dry desert, have each their "facies." Moreover, dicotyledonous plants have finely dissected leaves when growing under water. All these facts tend to show the influence of the environment which is acquired and transmitted because the seeds transmit the characters, the plants all coming true by the seed. It was an axiom of a celebrated French botanist that everything tends to become hereditary. A few generations encourage acquired traits in man, as may be seen in the appearance and bodily conformation of certain country folk, and nature tends to fix these. We can often tell the town-dwellers and their children from characters induced by their environment and partly from the transmission of these acquired characters through heredity. It is not too much to say that there is a definite response on the part of living protoplasm to changes in the environment and these changes become adapted to the new conditions of the organism and tend to become acquired. We can control inherited vice by a change in the environment and if the new and favourable environment is maintained and the surroundings are healthy we are able to remove some of the most fertile causes of drink. In sanitation and morality, plenty of pure water, fresh air, radiant light and sunshine, rational pleasures, education as to the value of good food, how to select it, and how to cook it, we have the best antidotes to drinking tendencies. This influence of education, the impressions given by social usage, increased facilities for healthy physical exercise and recreation, and the controlling factor of public opinion as to the effects of alcohol serve as the best auxiliaries to temperance. Such means are beneficial to self-respect and tend to sobriety. It is only with a healthy environment that we can sustain the organism in full vigorous health and supply the greatest resistance to temptation.

Treatment.—With regard to inebriety the treatment resolves itself into the general treatment of drunkenness and that of the individual. As to the latter it is either in their own homes or in retreats. In both cases it is certain, in my mind, that alcohol should be cut off completely and in the great majority of cases, indeed with but few exceptions, the total and sudden deprivation of alcohol is beneficial. In the few exceptions collapse results from sudden withdrawal of stimulants and this needs careful watching, for in cases complicated with insanity pneumonia is not an uncommon complication. This pneumonia fails to undergo resolution and it ends in phthisis with death probably within the year. Sleep and nourishment form the keynote of treatment; sleep is best obtained by gentle outdoor exercise, failing this by bromides—but not by morphine, as the latter may initiate a new craving. The great motor restlessness so often seen in alcoholic cases and caused by painful visual and aural hallucinations is best controlled by hyoscine in doses of from $\frac{1}{120}$th to $\frac{1}{60}$th of a grain administered hypodermically. Sulphonal and trional (20 grains twice or three times a day) are also useful but they increase the muscular incoördination and as the solubility of these drugs is limited they may disturb digestion and give rise to gastro-enteric catarrh. When the pulse is weak and in the case of elderly persons, paraldehyde in drachm doses is a safe sedative stimulant. It is necessary to watch for retention of urine when patients are under the influence of sedatives and it is also important to notice twitching of the muscles which may indicate uræmia, although convulsions may be due to causes other than alcohol, such as diabetes or epilepsy or cerebral hæmorrhage. As to feeding, simple, easily assimilable food—peptonised if necessary and a little at a time—should be administered. The general disturbance of the digestive system, marked by loss of appetite, sickness, or vomiting, often tends to make the taking of food repulsive. In these circumstances ice, effervescing mixtures, salines, bismuth, or lime-water may be useful. The bowels should be carefully attended to and saline aperients taken freely to correct the dyspepsia and improve the appetite, which can often be stimulated by nux vomica, pepsine, dilute acids, or strychnine and bitter tonics. When bedridden the greatest attention must be given to cleanliness and the prevention of bed-sores, for the tissues of alcoholic persons are peculiarly unresistive and bed-sores once formed are most difficult to heal. For the cure of inebriety I do not know that there is any drug that can be relied upon and the secrecy of the various cures indicates their futility.

The following case under my care is typical of a great number of persons enslaved by alcohol and brought into retreats. A married woman, aged 31 years, left much to herself as her husband was often engaged in the evenings made undesirable friends who led her into drinking habits. Her father and brother died from alcoholism. Having become a victim she was taken (1) to a private home where she remained for six months and where she paid £60 and extras. She left (with her husband) as cured, but within a week relapsed, underwent (2) a special "cure" lasting a month, and this for four months in succession, each time with a private nurse, for which cure her husband paid 20 guineas per month in addition to payments for board, rooms, &c. Following this seven months afterwards came (3) a "cure," in the course of which she was twice inoculated in the left arm; she remained under this treatment for six weeks and paid 40 guineas. No improvement occurred, in fact she became worse, and two years afterwards matters were so bad that she was separated from her husband. In less than six months she was persuaded to enter (4) another retreat where she remained four months. Two days after she left she relapsed and was taken to (5) another home, where she remained two months, and upon leaving again immediately relapsed and was admitted into another home (6), where she remained from six to seven months, and underwent the treatment recommended in the previous home, taking "some medicine" every hour for 28 days. At the end of that time she wrote a testimonial that she had lost the craving and that her nerves were better. She soon relapsed and was then transferred to another home (7) where she remained four months. Two days after she left there she became absolutely drunk again and was brought to Claybury Asylum for attempted suicide where she has remained a year. She is about to be discharged as there are at present no indications of suicidal insanity.

I would here enter a protest against the gratuitous puffing of quacks and their remedies by the clergy, some of whom appear almost to ply a trade in these vaunted nostrums. What would be said of medical men who publicly opposed the teaching of clergy holding advanced theological doctrines or who pointed out what they considered to be false teaching or excessive ritual in the ranks of the ecclesiastical hierarchy?

The general treatment of drunkenness has become a question for the statesman, the reformer, and the philanthropist. The public, seeing the evil of excessive indulgence, has taken the matter into its own hands and has insisted upon special legislation to deal with drink. It acknowledges that excessive facilities mean excessive drinking and areas of congested population with a large supply of public-houses are also areas of excessive disease and mortality from alcohol. Measures which control the sale of drink assist sobriety. This is not only the testimony of the police but also of others who are responsible for the regulation of disorder and the scope of the present Licensing Bill is upon this basis. In so far as the treatment of inebriety by restraint is concerned the law at present permits of detention in (1) retreats, or (2) reformatories, the essence of the treatment being to cut off the patient completely from alcohol and the recognition of the fact that inebriety is a vice and that the victims are not insane. The Inebriates Act of 1879 allowed a chronic drunkard voluntarily to enter a retreat and to segregate himself from the rest of society with a view of reforming his character by improving his will-power. The Inebriates Act of 1898 *compulsorily* ordered his detention, and a "retreat" into which admission is enforced is no longer called a "retreat" but a "reformatory."

Retreats are for inebriates; *reformatories* are for law-breakers as well as inebriates. Retreats are for the treatment of private drunkenness in private life—i.e., for those persons who bring misery and ruin upon themselves and their families. A retreat is an institution conducted for the control and treatment of a certain class of inebriates and may be conducted by one or many persons under a licence from a county or borough council. Persons who enter retreats go there voluntarily; they actually ask for detention which must not be for over two years and they submit to restraint. Two documents are necessary: (1) a request for reception, or retention after reception, or for readmission—if within five years of a previous residence—signed before a magistrate; and (2) a statutory declaration, in view of admission, signed by two friends, also before a magistrate (or a commissioner of oaths). Persons thus received are "patients under the Act" and 259 "patients under the Act" were admitted, 225 were discharged, and 199 remained in retreats during 1902. An inebriate may also voluntarily enter a retreat without a magistrate's attestation,

there being only the applicant's request, but in this case he cannot be detained against his will, even if he has promised to stay for any definite period, and if he leaves he only forfeits his payment if he has not stayed his full time. Such patients are described as "private patients" and 293 such patients were admitted into the 21 retreats existing in 1902, whereas 283 were discharged and 216 remained under treatment. It will thus be seen that about one-half of the total 552 (247 males and 305 females) persons admitted under care into retreats was of the voluntary, temporary, or "private patient" class. A patient received into a retreat may have "leave of absence" or he may be discharged before the period of detention expires if the licensee recommends and a magistrate consents and a notice of intention to discharge is sent to the Secretary of State. It may be pointed out that in some countries (France, Germany, and Austria) "guardians" can be appointed to look after the property of the inebriate and to compel his detention in a retreat, a power similar to that given to magistrates by the Act of 1898, but upon the question of legal care of inebriates, as also upon other matters, reference must be made to the special report of Dr. R. W. Branthwaite to the Home Office.

Reformatories are of two kinds—viz., (1) State reformatories, of which two exist—one for females at Aylesbury and one for males at Warwick—established (*a*) for the 10 to 15 per cent. of more refractory cases in other reformatories and (*b*) for those committed from the assizes or sessions and not from police courts; and (2) certified reformatories for criminals and police-court cases, called "police-court recidivists." These reformatories, of which there are now eight with 624 beds, are of two kinds (*a*) philanthropic and (*b*) rate-aided from local authorities which are established for impoverished and destitute persons. At the end of 1902, four years after these were first established, 714 persons had been admitted and there were 419 under detention at the end of the year 1902, 278 (46 males and 1 232 females) having been admitted during the year. At first there were more males than females; at the end of four years, however, the males remain the same but the women have doubled. Two kinds of cases are sent to reformatories: 1. Persons convicted of habitual drunkenness and a crime punishable by imprisonment or penal servitude and called criminal inebriates. These are sent to State reformatories but they may be sent to certified reformatories, the Secretary of State having power to transfer them subsequently to State reformatories; 46 were so sent during 1902. 2. Persons who had committed a scheduled offence (mostly different kinds of intoxication) and against whom there had been three previous convictions for drunkenness within the year. These are sent to certified reformatories; 232 were so sent during 1902. In June, 1903, there were no fewer than 495 persons of the worst possible class and character detained in reformatories to the great relief of many homes, of the order and safety of our streets, and to the advantage of public morality and decency. Many of these are mentally deficient and degenerate and are unimprovably refractory. The last Act which became law in 1903 gave inebriates a further chance of improving by three years' abstention on the "black list" at large rather than undergo detention. It also made it possible for a wife to be separated from a drunken husband and for a wife before separation to go voluntarily into a retreat with a view of reforming.

Claybury.

CONTRIBUTION TO THE SERO-THERAPEUTIC TREATMENT OF ANTHRAX: TWO CASES OF GENERAL ANTHRAX INFECTION IN MAN CURED WITH ANTI-ANTHRAX SERUM.

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IN deciding how far a specific treatment is really effective in a disease which is not necessarily fatal, as, for instance, anthrax in man, I believe that it is of the utmost importance to record those cases (by no means rare in practice) in which that treatment has been used under conditions of extreme gravity when the morbid process has become generalised, and in which also clinical observations have been accompanied by the strictest laboratory experiments. I propose to give a detailed account of two cases of general anthrax infection, proved to be so bacteriologically, and successfully treated by me with anti-anthrax serum at St. Paul, Brazil. One of them will be seen to have been of exceptional severity. I shall describe briefly the mode of preparation of the serum, its specific strength, and indicate certain rules which should be observed in the special cases when it is injected into the human subject. Its preparation was commenced in February, 1902, at the Bacteriological Institute of the State of St. Paul. The method followed was the same as that which I had used in preparing the bactericidal antidiphtheritic serum—viz., inoculation in gradually increasing doses of "sensitised" anthrax bacilli alternately with injections of older anthrax cultures in broth to which had been added, in accordance with Sclavo's method, 5 per cent. gelatin, with the intention of also inoculating in all probability considerable doses of the toxic products of the anthrax bacillus. Each inoculation was followed by one of anti-anthrax serum in doses of from 10 to 15 cubic centimetres until the animal from which the serum was to be obtained had acquired a decided resistance to the anthrax bacillus and its toxic products. To "sensitise" the germs and for the protective inoculation Sclavo's serum proved of the greatest use. I chose the sheep as the animal from which to obtain the serum for the reason, that although less resistant than the mule, its smaller value allows the experimenter to render immune a great number of animals simultaneously. Sclavo has shown that this is absolutely necessary also in the case of the ass, the activity of the serum differing in one individual and another. Some animals even after quite a long period of immunising treatment furnish a serum almost destitute of specific properties. By the above method I obtained from a sheep of about 30 kilogrammes in weight after one and a half months' treatment a serum possessing considerable antibactericidal and antitoxic activity. To determine its bactericidal power in vitro, following Bordet and Gengou's method for determining the presence of immune bodies and specific agglutinins, I placed given dilutions of serum in normal physiological salt solution in contact with emulsions of scrapings from the surfaces of recent agar cultures of anthrax bacillus filtered through paper in the same way as was done by me for the bacillus of diphtheria and bubonic plague, these being, like the anthrax bacillus, germs that normally develop well in the liquids used for cultivating them. The anti-anthrax serum thus prepared attained a high proportion of immune body, as could be easily shown in vitro. Its agglutinating power on the anthrax bacillus attained a maximum of 1 in 40—a high figure when the low agglutinating power and the small agglutinogenous properties of the anthrax bacillus are borne in mind. The very active anti-anthrax serum prepared by Sclavo rarely attained a higher agglutinating value. To test the preventive and curative value of the serum I made use of Sclavo's method—viz., intravenous injections in the rabbit of from three to five cubic centimetres of serum simultaneously with subcutaneous inoculations of one-half to one cubic centimetre of a dense emulsion of anthrax bacilli made by diluting with distilled water scrapings from the surfaces of young agar cultures. This amount of virus was invariably sufficient to kill the control animals within 48 hours. In the various experiments made I was always able to save at least one-half of the inoculated rabbits. The susceptibility of the rabbit to anthrax is, as is well known, so great that this result may be considered extremely good. There is no experimental method by which to determine exactly the antitoxic power shown by the anti-anthrax serum, mainly because we have not yet succeeded in preparing a true anthrax toxin and are ignorant how far the products derived from cultures of the anthrax bacillus resemble in constitution and in effect the toxic products elaborated by the same bacillus in the living organism. Anyone, however, who has had occasion to make use of a properly prepared anti-anthrax serum in exceptionally severe cases of anthrax in man can easily assure himself of the existence in this serum of energetic antitoxins. In serious cases of this kind the toxic phenomena are evident and very distinct but after the use of the serum they diminish and disappear with remarkable rapidity. This was my experience in the two cases to be described.

Before giving a detailed description of these two clinical

cases and of the specific serum treatment adopted I shall touch upon a special detail in the injection of the serum in man. This detail concerns only such severe cases as necessitate intravenous injections of serum in large doses. Here perhaps I am not in agreement with all those who have treated the subject. Sclavo, for instance, thinks that the activity of the serum to be inoculated alone should be considered, which acts first of all as an energetic excitant of the natural powers of defence possessed by the organism. Although we may admit the fundamental truth of this principle, we must nevertheless remember that in cases of exceptional gravity, treated at an advanced stage when little reliance can be placed in the power of reaction of the organism against the disease, there is no reason why we should not attempt as complete and rapid a neutralisation as possible of the toxins circulating in the system. The two cases to be described prove incontrovertibly the correctness of this theory; and I therefore feel myself justified in recommending that in cases of anthrax in man which show a decided tendency to generalisation, and especially in such as are marked by the phenomena of poisoning (diffused œdema, disturbances in the circulation, renal lesions, &c.), abundant intravenous injections of the anti-anthrax serum should be made. Moreover, my own experience shows, what others have already observed, that these intravenous injections of serum when carefully made even in large quantities give rise to no serious disturbance in the patient, and this is a further argument in favour of resorting to them in desperate cases. The practical detail in the method of injection referred to above relates to the large doses of serum which must be inoculated in these cases, for following as I did Sclavo's method of preserving the serum by adding to it ether in the proportion of 3 per cent. there is the risk of introducing into the veins with a large dose of serum a considerable amount of ether and this might be harmful. To obviate this danger I act as follows. A common glass vessel (an ordinary table glass will suffice) is boiled together with some squares of gauze. After the ten minutes' boiling necessary for sterilisation the vessel is removed from the water with its mouth covered with the gauze. As soon as the temperature of the vessel has sunk to about 104° F. the serum to be inoculated is poured upon the gauze and filtering through into the vessel below is freed from the precipitate which, especially if not of recent preparation, is always present more or less and which might be harmful if injected into the veins. It is freed also of the greater part of the added ether which rapidly evaporates, especially if the glass is well shaken. I introduced the serum thus prepared very slowly into the veins of the patient, pressing down the piston of the syringe little by little, so that I was able in the following two cases to inject large quantities (as much as 150 cubic centimetres at one time) without producing any injurious results.

CASE 1.—The patient was a man, aged 30 years, a cattle-dealer at St. Paul (Brazil). On August 8th, 1903, at 11 A.M., I was called by the medical man in attendance (Dr. Sodini) to examine the patient and to treat him with serum should it appear advisable. I was informed that the man had observed on August 4th a small pimple attended with itching in the middle third of the flexor surface of the right forearm. Having no suspicion of the gravity of the case he had poulticed the affected part and had not called in a medical man. The same evening he became feverish and becoming rapidly much worse medical attendance was sought on the following morning (the 5th). Dr. Sodini found the patient with a temperature of 105° F., very much excited, and his pulse frequent and irregular. The right forearm was very œdematous, the skin was stretched and reddened, and in the middle third of the flexor aspect there was a pustule with a necrotic centre surrounded by a broad bluish band. The epitrochlear glands were very much swollen and in the right axilla a gland was seen of the size of a nut and painful to the touch. Dr. Sodini recognised that he probably had to do with an exceptionally serious case of external anthrax showing a tendency to rapid generalisation. Dr. A. Vieira de Carvalho and Dr. Pereira da Rocha were called in and agreed with Dr. Sodini in his diagnosis of external anthrax with a tendency to rapid generalisation and it was decided to apply the thermo-cautery at once. The local action of the thermo-cautery, although liberally used, proved, however, quite powerless to arrest the progress of the disease and the patient grew worse with such alarming rapidity that the three medical men after another consultation on the 8th (three days after the application of the thermo-cautery) declared the case desperate and decided unanimously to call me to try, as *ultima ratio*, the use of the serum.

When I saw the patient at 11 A.M. on the 8th he was in a state of coma. His pulse was rapid and intermittent and the temperature was 104°. For the last 24 hours he had passed very small quantities of turbid urine, which was found to contain a large amount of albumin. The microscopical examination of the sediment showed in addition many granular casts and red corpuscles. The right arm was enormously swollen; the œdema had spread to the shoulder and even to the edge of the great pectoral muscle. In the right axilla was a swollen gland of the size of a hen's egg, hard and extremely painful to the touch. All round the large necrotic zone due to the very free use of the thermo-cautery were several vesicles of varying size filled with a serous, slightly turbid liquid. From the fluid in them microscopic preparations and cultures in broth and in agar were made. 20 cubic centimetres of blood were drawn from the middle vein of the left arm at the bend of the elbow. From one portion of this blood microscopical preparations and cultures in broth and agar were made and from the other cultures in gelatin. After this I injected 150 cubic centimetres of anti-anthrax serum into the middle vein of the left arm. The microscopical examination of the exudation drawn from the vesicles showed the characteristic anthrax bacillus; that of the blood gave a negative result. Anthrax bacilli developed in all the tubes of agar and broth inoculated with blood; the gelatin plate cultures gave an average of 12 typical colonies of bacillus anthracis per cubic centimetre. This bacillus was then sensitised with anti-anthrax serum, which agglutinated it in the proportion of 1 in 30 in the space of an hour. It killed guinea-pigs of a weight of from 400 to 450 grammes in 72 hours with the characteristic symptoms. On the evening of the 8th I visited the patient again. About an hour after the inoculation of the serum he had had a slight access of dyspnœa, had been delirious, and had perspired profusely. These same manifestations, and especially the profuse diaphoresis, I remember to have observed almost invariably in cases of bubonic plague at the Hospital for Infectious Diseases at St. Paul after intravenous injections of large quantities of anti-plague serum. The pulse was less frequent and irregular than it was in the morning; the swollen gland was still hard and very sensitive to the touch. A second intravenous injection of 50 cubic centimetres of anti-anthrax serum was made. About two hours after the injection there was again profuse sweating. The patient passed a somewhat disturbed night. Urine was abundant. The patient on the morning of the 9th was quite calm; he had slept in the early hours of the morning; his general condition was sensibly improved. The pulse was regular though somewhat frequent; the temperature was 101°. The urine, abundant during the night, was limpid and there was a very slight trace of albumin, while the microscopic examination of the sediment obtained by centrifugalising showed but few granular casts and red blood cells. The œdema in the arm was considerably diminished; the axillary gland was less swollen and had almost ceased to be painful on pressure. I thought it advisable to continue the treatment with serum and injected under the skin of the abdomen 40 cubic centimetres of anti-anthrax serum. He had a quiet day, had many hours' sleep, and the kidneys acted freely. On the 10th his general condition was good; the pulse was normal and the temperature was 98·5°. The examination of the urine for albumin and for renal elements was negative. The œdema was confined to the forearm, round the large necrotic area caused by the action of the thermo-cautery; the axillary gland had ceased to be painful and had diminished to the size of a nut. I took 15 cubic centimetres of blood from a vein of the left arm. With a portion of the blood cultures in broth and agar were made and with the other part, after defibrinating it, I inoculated three guinea-pigs, two under the skin and the third in the peritoneum. All these tests gave negative results. On the 11th the patient had passed a very quiet night; the general conditions continued good, the examination of the urine showed nothing abnormal, the œdema had almost completely disappeared, and the gland in the armpit was hardly to be felt. On the 12th the patient's condition could not be better; he was very hungry and he had slept quietly. He might now be considered fairly convalescent and bore no trace of the severe infection he had been through beyond considerable

weakness and the great wound opened by the thermo-cautery, the closing of which would naturally require a long time. I saw the man again after he was completely healed of his wound. He felt no further effects of his illness.

CASE 2.—The patient was a man, aged 27 years, a butcher at St. Paul. On the evening of Oct. 2nd, 1903, I was called in haste by Dr. F. Buscaglia to treat with serum a serious case of malignant pustule which he was then attending. The patient presented in the middle third of the flexor surface of the right forearm a characteristic pustule of the size of a two-centime piece with vesicles and surrounded by a broad violet zone. The whole of the forearm was much swollen; the epitrochlear glands were swollen and painful and in the right axilla was a swollen gland of the size of a pigeon's egg and very painful to the touch. The patient's general condition was somewhat serious. The pulse was frequent and irregular and the temperature was 103° F. The patient was very restless and complained of a burning sensation where the pustule was and of a sharp stabbing pain in the right axilla. He had passed very little urine during the preceding 24 hours; the urine was slightly albuminous; it contained no casts. The pustule was cauterised with the thermo-cautery, after which I made an intravenous injection of 80 cubic centimetres of anti-anthrax serum and a subcutaneous injection of 30 cubic centimetres in the abdomen. Preparations made directly with material taken from the pustule showed the characteristic anthrax bacilli. In the gelatin plate cultures, made with blood, appeared typical colonies with an average of seven colonies per cubic centimetre. This bacillus was characteristically sensitised and agglutinated by anti-anthrax serum; it was virulent when injected into guinea-pigs. On the 3rd he was very restless during the first hours of the night and perspired profusely. Towards morning he fell asleep and slept soundly for nearly four hours. His general condition was good; his pulse was regular, his temperature was 98·5°, and his kidneys acted freely. There was no albumin in the urine. Examination of the blood revealed no bacteria. The œdema of the affected arm was considerably diminished and the glands were almost normal in size; the axillary gland had diminished in size and was painless to the touch. Having obtained so sudden and decisive an improvement I thought it unnecessary to continue treatment unless anything unforeseen should again render it necessary. On the 14th the condition was excellent; he slept well; the œdema had almost completely disappeared and the glands were almost normal. The rapid improvement continued and after four days the man went back to work.

Examination of these cases clearly proves that, although isolated, they give stronger support to treatment with anti-anthrax serum than is to be drawn from a long series of cases of simple external anthrax successfully treated with anti-anthrax serum at the outset under conditions which leave it doubtful whether the usual local treatment destructive of the original seat of infection might not have been of itself sufficient to arrest the progress of the disease. In both the cases described the clinical and bacteriological examination confirmed the diagnosis of exceptionally severe general anthrax. In both cases, but especially in the first, the serum was used when the signs of serious general poisoning were chiefly apparent in the œdema which had spread far from the primitive seat of infection, in grave disturbances of the circulation, and in the evident lesions of the kidneys. Moreover, in the first and without doubt the most serious of the two cases the action of the serum was rapidly decisive when free cauterisation of the primitive seat of infection had completely failed. The double action of the anti-anthrax serum, antibacterial and antitoxic, is plainly evident, its antibacterial power shown by the immediate arrest of the progressive invasion of the organism by the bacillus, and its antitoxic power by the sudden improvement in the general condition of the patients and by the complete *restitutio ad integrum* of the renal function immediately after the use of the serum. I would insist on the necessity of treating such severe cases energetically by injecting into the veins large doses of the specific serum. For while, on the one hand, no justifiable opposition can be made to the treatment when carried out with proper caution, in the practical result its antitoxic action as shown pre-eminently in the first of the above cases was so immediate as to suggest rather a rapid neutralisation of the toxins circulating in the system than a stimulating action of the specific principles contained in the serum on the natural defensive powers of the organism.

Bologna.

CASE OF REMOVAL OF THE APPENDIX ON A ROYAL MAIL STEAMER AT SEA; RECOVERY.

BY T. H. MACFIE, M.B., C.M. EDIN.,
SURGEON, ORIENT PACIFIC LINE.

OUR chief engineer, aged 44 years, was taken ill on May 10th, 1904. We were then four days out from Suez and Colombo, our next port of call, was distant six days. He complained of pain in the bowels and felt sick and disinclined for food. He had a normal pulse and a temperature or 99° F. The bowels had moved during the day and he had not vomited. There was tenderness in the right iliac fossa but nothing could be felt. He had been liable to attacks of pain in this region for some years and when a junior engineer he used to seek relief by leaning against some hot pipes in the engine room. These attacks had become gradually more severe; the last one, nearly two years ago, necessitated his being in bed for over a week. There was a history of two attacks of typhoid fever. On the 11th he complained of more pain. The morning temperature was 99 5° and the pulse was 100 and of fair strength. There were more tenderness in the right iliac region and some resistance on pressure but no tumour could be felt. The percussion note was clear and a rectal examination disclosed nothing. During the day he was given two three-grain calomel powders and later two rectal injections of warm water, after which the bowels acted. Dr. Milne of Sydney, a passenger by the steamer, kindly saw him with me at night. The temperature then was 103°, the pulse was 108, and the local condition remained unchanged. We agreed as to diagnosis and decided that operation was not then indicated.

We saw the patient again together on the morning of the 12th. He had passed a restless night and looked worn and anxious. The temperature was 104° and the pulse was 110 and weak. During the night he had had an attack of shivering and he had vomited twice. The local tenderness had not increased; if anything there was more resistance on pressure but still no swelling could be felt. We now advised an operation as the only means of affording relief and having obtained the patient's consent we made the necessary arrangements to have it done in the ship's dispensary at 2 P.M. We were then in latitude 10.20 N., longitude 59.30 E., distant some 1222 miles from Colombo. Excepting an atmospheric temperature of 92° the weather conditions were favourable and promised to remain so. Dr. Milne gave the anæsthetic (equal parts of chloroform and ether) and the chief steward (Mr. Rigden) assisted at the operation. The abdomen was opened by an incision four inches long, having for its centre McBurney's point. The omentum was not adherent and only a few adhesions were found round the cæcum. The appendix was found behind the cæcum with its free end pointing towards the umbilicus. It was two and a half inches long, very much inflamed, and its terminal portion was distended. About its centre there was a patch of yellow necrosed tissue of the size of a pea. It was packed round with sterilised gauze, ligatured half an inch from its seeming base, and cut off. In doing so some thick offensive material escaped on to the gauze packing. On examining the stump afterwards a portion, firmly adherent to the cæcum, was discovered. This was separated, a fresh silk ligature was applied, and this portion was then removed. The stump was touched with pure carbolic acid and the peritoneum was stitched over it with a fine silk suture. The abdominal wound was closed with three layers of sutures and a cyanide gauze dressing was applied. At night the temperature was 101° and the pulse 108 and he seemed comfortable.

The patient had severe chloroform sickness for three days after the operation; ice, hydrocyanic acid, chloretone, and creasote were tried without any benefit resulting. Rectal feeding was resorted to and this, with hypodermic injections of morphine (one quarter of a grain) and atropine ($\frac{1}{150}$th of a grain) kept the sickness in check. The temperature on May 13th was 98°; it reached 100° on the 15th, after which it fell to normal. The bowels acted on the 17th after the administration of three grains of calomel by the mouth and two rectal injections of warm water and turpentine. The wound was dressed on the 19th when two stitches were removed. On the 21st some discharge was coming from the

wound where a stitch had been removed. On the 23rd all the stitches were removed; the discharge was less in amount and the wound looked healthy. It was dressed daily until June 3rd when it had quite healed.

I take this opportunity of thanking Dr. Milne for his ready coöperation during the critical period of the case, for without his assistance an operation would have been impossible.

A NOTE ON HOME-MADE "HUMANISED" MILK.

BY C. BEAUCHAMP HALL, F.R.C.S. ENG.,
DISTRICT SURGEON TO THE CITY OF LONDON LYING-IN HOSPITAL.

VARIOUS methods have been from time to time brought forward and advocated for the rearing of artificially fed infants with more or less success. The following method of making home-made "humanised" milk, provided the instructions are properly carried out, has proved extremely satisfactory in my hands. I think the method is worth recording not only on account of its success but because every year the number of infants who have to be reared in this way seems to be on the increase. In a very small minority of these cases the mother has no milk or a very small quantity, or else it disappears on her resuming her everyday life. In a few cases breast-feeding has to be forbidden on account of breast troubles, anæmia or debility in the mother, or an inferior quality of milk. Very frequently, however, I find that the mother will not nurse her infant for one reason or another. It is our duty to endeavour that every infant shall develop into a healthy child as the result of our advice in this direction, whatever the cause may be of its being denied its natural food. For some years I have employed one or another of the methods hereafter described with slight modifications in practice. The results have been good provided the few simple rules are carefully followed.

The following are my reasons for preferring a home-made article. 1. Dairy-made "humanised" milk may after manufacture presumably become as easily contaminated as ordinary cow's milk, whereas if we start with sterilised cow's milk and guard against contamination we are certain of a pure article at the finish. Moreover, contamination is far more probable at a dairy than at home, if for no other reason because the process must pass through several hands. 2. We cannot be certain of the composition of dairy-made "humanised" milk or of the constancy of that composition and in my opinion the latter has an important bearing in cases of failure. 3. On several occasions I have had cases of diarrhœa following the consumption of dairy-made "humanised" milk which have ceased on substitution of the home-made article. 4. Expense in some cases has to be taken into consideration. Dairy-made "humanised" milk costs 8*d.* a pint. The home-made variety in addition to the ordinary price of cow's milk costs about ½*d.* a pint and occupies about 20 minutes a day.

As I have said before, mother's milk is the natural food of infants and it follows that as close an imitation of this natural food as we can produce is the most rational substitute for it. Synthetically it is perfectly easy to mix caseinogen, fat, sugar, and the other constituents of milk, together with water, and imagine that milk is thus obtained; but—and this is one of the greatest faults of patent foods—there is an indescribable element lacking which no chemist or physician can manufacture. I refer to the natural element of freshness which gives to breast milk in a healthy mother preventive power with regard to rickets and infantile scurvy. Cow's milk, along with other natural foods, contains this fresh element and therefore every food for the artificially reared infant must have cow's milk as its basis. The artificially reared infant starts at a disadvantage compared with the breast-fed infant and the substitution of any other basis and absence of this fresh element mean sooner or later the production of anæmia, rickets, or scurvy. A bad start during infancy will always leave a lasting mark in the after race for life.

Until three years ago I was in the habit of prescribing dairy-made "humanised" milk, but as I have stated above cases of diarrhœa distinctly traceable to this food occurred, and as a few of the babies were of the flabby, anæmic type, without definite rickets, I sought out some different process of manufacture. Being convinced absolutely that in theory "humanised" milk was far and away the best food, it was in the practice—i.e., the manufacture of it—that I surmised the fault lay. My first object was to obtain a pure and trustworthy preparation of rennet and having succeeded in doing so to standardise it. My object in standardisation was to save unnecessary expense, owing to the difficulty in obtaining an absolutely pure article. The rennets on the market are mostly extremely variable preparations and this applies especially to the liquid preparations. Of these, sometimes as much as three or four times the amount is required to curdle a certain quantity of milk as is required at other times. Also, the glycerine with which they are made may not always be pure. Undoubtedly, therefore, a powdered form of rennet is the best. This is purified and standardised. Formerly I used a powder mixed with two grains of bicarbonate of sodium, but now I believe the method is still further improved by making the powder into a compressed tablet, thus insuring accuracy. Each tablet, besides containing sufficient rennet to curdle half a pint of milk, contains one and a half grains of bicarbonate of sodium, half a grain of calcium phosphate, and five grains of lactose. The sodium bicarbonate is added to neutralise any lactic acid formation and consequent fermentation that might result in the hot weather. The calcium phosphate is added because rennet, like other ferments, acts better in the presence of a calcium salt, also because of its remarkable action in helping tissue formation in growing children. A certain quantity is present in normal milk and this extra quantity, although small, is beneficial. The lactose is added to make up the deficiency of this substance in cow's milk as compared with human milk. Hofmann advised the addition of 110 grains of lactose to each pint. The necessity of this large quantity is not apparent. When milk is curdled by rennet 75 per cent. by volume consists of whey, the rest being curds. Now whey contains every substance in the milk except fat and caseinogen and therefore it contains lactose. Human milk contains 5 per cent. of lactose and cow's milk 3·8 per cent. (Halliburton). From half a pint of cow's milk we obtain seven and a half ounces of whey, which necessarily contains 3·8 per cent. of lactose. By adding five grains of lactose to seven and a half ounces of whey and 10 ounces of milk a mixture is obtained containing the same quantity of lactose as that quantity of human milk would contain. The deficiency of fat which this mixture would contain (0·3 per cent., Halliburton) by admixture is made up for by skimming the half pint of milk that is to be curdled. These tablets then make a mixture almost identical with human milk and the instructions for their use I have ordered to be inclosed with the tablets.

The directions are as follows:—Boil or sterilise half a pint of cow's milk. Take another half a pint and skim it and add the skim to the first half pint. Crush a tablet and when the skimmed half pint has been heated to 100° F. add the crushed tablet, stir, and keep at about the same temperature for 20 minutes, separate the curd thus produced, and then boil the whey for two minutes. Add this whey to the first half pint and to this mixture add three ounces (six tablespoonfuls) of boiled or sterilised cow's milk. Soak all vessels used in boiling water before and after use. The quantities given in these directions make one pint. Mr. Felthouse of Highbury Park has manufactured the tablets according to my directions.

Compton-terrace, N.

EXTRA-UTERINE GESTATION: A FULL-TERM CHILD REMOVED BY OPERATION FOUR MONTHS AFTER FŒTAL DEATH.

BY GEORGE E. WHERRY, M.C. CANTAB., F.R.C.S. ENG.,
SURGEON TO ADDENBROOKE'S HOSPITAL, CAMBRIDGE.

A HEALTHY woman, aged 38 years, came under my care in Addenbrooke's Hospital with an abdominal swelling of about the size of a pregnant uterus at nine months. The swelling felt firm in some parts and in others cystic or elastic. There was resonance in the flanks. On vaginal examination the os was soft and slightly patulous; there was no firm swelling

in the pelvis. The nipples were large with a dark areola and exuded on pressure a small quantity of milk. There was a small, well-marked, supernumerary nipple, with a dark areola round it, situated about three inches in a line with, and below, the left nipple. The patient had had a child 20 years ago whom she nursed at her breast during six weeks until the infant's death. She was regular in menstruation since the loss of her child until May 21st, 1903. Since this date she had seen nothing except that about four months previously there was a discharge of dark blood during several days. In July she was examined by two medical men who told her that she was pregnant. She had abdominal pain and sickness, the breasts were swollen, and she had difficulty in passing urine. In August of the same year she noticed a tumour above the pelvis. In February, 1904, she felt movements in the swelling which had risen above the navel. There were intermittent pains in the abdomen and these symptoms lasted several days. She was visited by four medical men on Feb. 22nd as she was expecting to be delivered. She felt the movements up to March, when on the 4th of that month her mother died and she felt movements no more.

An operation under chloroform was performed on July 1st. An incision below the umbilicus encountered the placenta; beneath and below this a sac of dark fluid, not ill-smelling, was emptied. A child lying in the fluid, the left arm presenting and the head in the left iliac fossa, was delivered. The placenta was removed by blunt dissection and the cavity was cleared out with sponges. The sac was firmly adherent to the bowels and much of it was therefore left behind. The left tube and ovary were of about twice the natural size and firmly adherent to adjacent intestine. The other ovary and the uterus were normal. There was little bleeding. A gauze drain was used. The patient made a good recovery.

The child was a full-term male with perfect nails and the testes in the scrotum. It was slightly macerated in places but was not putrid and was but very little discoloured or altered in appearance from that of a stillborn child delivered from the uterus. The limbs and cervical spine were unnaturally flexed and twisted.

It may be reckoned that this infant grew to full term among the intestines and lay there dead during four months. Thus there was no hæmorrhage in "peeling" away the placenta. There was no putridity, probably from the fact that the placenta was nowhere adherent to the bowels but only to the abdominal walls. In this case if an operation had been performed by the ordinary incision during the life of the child it would have been difficult to deal with the hæmorrhage from the placenta. A lateral opening in the abdomen leaving the placenta untouched would have been the best procedure.

Cambridge.

A Mirror
OF
HOSPITAL PRACTICE,
BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

ST. THOMAS'S HOSPITAL.

A CASE OF FEMORAL ANEURYSM IN HUNTER'S CANAL; LIGATURE OF THE SUPERFICIAL FEMORAL AND POPLITEAL ARTERIES; CURE OF THE ANEURYSM; DEATH FROM CARDIAC DISEASE TEN WEEKS LATER.

(Under the care of Mr. H. BETHAM ROBINSON.)

THE patient, a man, aged 48 years, was admitted under the care of Mr. Betham Robinson into St. Thomas's Hospital on August 19th, 1901. His father had died from a burst blood-vessel. He himself had always been a healthy man, without any history of syphilis, but owned to indiscretions with alcohol during the last four years. 14 weeks before admission he had a bad attack of pneumonia. Four weeks before he began to have very great pain in his right thigh, lasting for hours at a time, for which various remedies had been tried without any relief. During the last ten days the leg had been very swollen, more than at the present time, and he had also noticed that the swelling in the thigh pulsated.

On admission there was a fairly large pulsating tumour occupying the middle third of the thigh (Hunter's canal) which was extremely painful and tender to the touch; the pulsation was expansile. The right dorsalis pedis artery was much weaker than the left. There was double aortic disease with cardiac hypertrophy, but no evidence of thoracic dilatation. The pulse was moderately water-hammer in character and the vessels were obviously thickened. A few days' observation showed him to have an irregular temperature, never exceeding 101° F.; as to the cause ulcerative endocarditis was questioned unless due to the local condition. Dr. H. G. Turney was certain that there was no state of lung remaining to account for it. There was no albuminuria.

As the aneurysm was of rapid onset and progressive, and so very painful, Mr. Betham Robinson decided to operate. On August 28th he ligatured the superficial artery at the apex of Scarpa's triangle; the vessel here seemed quite healthy and three floss-silk ligatures were used and tied by the Ballance and Edmunds method. Any idea of excising the aneurysmal sac, if entertained, would have been impracticable as the sac was too diffuse. The ligature temporarily stopped all pulsation in the sac but before the wound was stitched up it had returned with fair force. To combat this the upper part of the popliteal was ligatured, it being cut down upon just below the opening in the adductor magnus, which procedure was perfectly successful in stopping all pulsation. The limb was dressed and well bandaged in cotton wool. On the 30th considerable pain had still been present in the leg since the operation, but it was eased by morphine. The leg was fairly warm. The temperature remained irregular. On Sept. 4th the wounds were healed and all stitches were removed. There was no pulsation in the sac; the condition of the limb was good. There was slight pulsation in the dorsalis pedis. The patient complained greatly of pain down the leg which seemed especially referred to the area supplied by the internal saphenous nerve. On the 11th pulsation was very distinct in the dorsalis pedis. There was very great pain in the leg. The temperature was irregular, ranging from 98° to 101° F. On Oct. 11th it was stated that since the last note the pain in the leg had been just as severe; whether due to this cause or not the mental condition was very unsatisfactory. On the 14th, to try to remedy the severe pain down the leg, the internal saphenous nerve was cut down on at the upper part of Hunter's canal and one and a half inches of it were resected. On the 17th considerable relief of pain had followed the resection of the nerve, but unfortunately this proved only temporary as the patient now again complained of its severity and referred it particularly to the calf of the leg. His mental condition was most unsatisfactory, bordering on maniacal, so that it was difficult to estimate the real character of his pain. On the 19th, after being in a most excited state all the night, he said that he felt very much better. On the 21st he had been quieter during the last two nights and had been able to do without morphine. He was given paraldehyde but he slept very badly. He was getting very emaciated. There was still pain in the calf of the leg. On Nov. 2nd the patient was very restless and excitable. He still complained of great pain in the calf and feet. He lay with his legs drawn up and could not be made to straighten the right one. He died quite suddenly on the morning of the 5th from syncope.

Necropsy.—At the post-mortem examination the aneurysm was so much reduced in size as to appear as a slightly enlarged vessel with very thick walls and filled with clot. Extensive aortic disease was present. The left ventricle was dilated and hypertrophied. There were atheromatous patches on the mitral valve and atheroma of the aorta and coronary arteries. The spleen was very large and soft, with a superficial scar at one spot either of infarct or gumma. The kidneys were large and firm.

Remarks by Mr. BETHAM ROBINSON.—Femoral aneurysms, or those occurring from that part of the vessel supported by muscles, are rare, and particularly so those strictly limited to Hunter's canal. They have been recorded involving both this part of the vessel with the popliteal in addition, the popliteo-femoral variety. In this case it was proved, as will

be shown later, that the aneurysm was not of this type. Lisfranc, in a table comprising 179 cases, excluding the aorta, gives 18 from the femoral artery, not including those in the groin, but he does not state the exact point of origin or whether the popliteal was also involved.

In the treatment of the above case the use of compression was negatived from the associated aortic disease with its attendant mental irritability. The treatment adopted was the orthodox Hunterian operation; this was succeeded by immediate return of pulsation in the sac. To what was this rapid recurrent pulsation due? This is usually attributed to a free anastomosing circulation through a vessel communicating with the sac. Here it was very probable that the anastomotica magna did communicate with the sac, but the pulsation could not have been transmitted through it, for why did ligature of the popliteal above the upper articular arteries stop the pulsation? According to accepted views it is considered unlikely for pulsation to be transmitted to the sac through the lower end of the vessel, but yet in face of the facts it looks as if such were the case. We must suppose that there was such a free anastomosis between the descending branch of the external circumflex and the articular vessels already established that the heart's contractions were able to be transmitted to the contents of the sac.

It may be urged that the ligation of the popliteal artery was unnecessary, as the pulsation would have ceased in a short time, as is considered to be the usual sequel; it must be borne in mind that there was also a probability in the other direction and the pulsation was very free. The adoption of a novel and what seemed a more certain course of action did not appear to be fraught with any danger and was putting the patient in much the same position as in excision of the sac after ligaturing above and below.

The effect on the sac is worth noting. It will be remembered that the sac was an ovoid one of very rapid formation and the presumption is that with this dilatation there had been next to no deposition of hard clot. The soft clot shut up in the sac with the vessel's wall underwent such rapid shrinkage that at the necropsy ten weeks later the only evidence where the dilatation had been was a slightly dilated vessel with very thickened walls.

As to the cause of the aneurysm it would appear that it was embolic. There were old vegetations on the aortic valves and superimposed on this was recent endocarditis. The irregular temperature with pneumonia suggested that this was infective and the acute development of the aneurysm was in accordance with such a view.

The only other point for consideration is, What was the nature and origin of the severe pain in the leg? For a time I suspected the possibility of inclusion of the nerve in the ligature but the painful area was not defined enough; it was proved subsequently not to be the origin, because the nerve was shown not to have been included and resection of a portion of it did not remove the pain. It is possible that the attacks of pain were due to arterial spasm or arterio-sclerosis, the symptoms being allied to those met with in the condition of "intermittent claudication," first described by Charcot and more recently by Osler, Levy, and Riesman.

MANCHESTER ROYAL INFIRMARY.

A CASE OF ANEURYSM OF THE SUPERFICIAL FEMORAL ARTERY; LEAKAGE; LIGATURE OF SUPERFICIAL FEMORAL AND SUBSEQUENTLY OF PROFUNDA AND ILIAC ARTERIES WITH INCISION OF THE SAC.

(Under the care of Mr. G. A. WRIGHT.)

FOR the notes of the case we are indebted to Dr. W. F. Shaw, house surgeon.

The patient, a man, aged 53 years, a bricklayer, was admitted to the Manchester Royal Infirmary on Sept. 28th, 1903, suffering from a large swelling on the inner side of the left thigh. He had been in the habit of resting bricks on his left thigh while he broke them with his trowel. He first noticed a numbness in his left thigh about six weeks previously to admission and a month later had what he describes as "inflammation" in that thigh—that is, the thigh became swollen and dark coloured but settled down with rest. A short time after he had a similar attack and went to the infirmary.

On admission the patient was a healthy-looking man. There was a large even swelling on the inner and anterior aspect of the left thigh at the junction of the upper and middle thirds. Measured six inches below the anterior superior spine of the ilium the left thigh was 21½ inches in circumference and the right thigh was 18¼ inches. The swelling looked about the size of a small melon but its edges were ill defined, especially at the sides. The skin over it was smooth and not discoloured nor was it marked by any enlarged veins. The swelling was uniformly elastic and was not adherent to skin or bone; it had a slight expansile pulsation. There was no difference in the pulsation of the arteries of the legs below the level of the swelling. Aneurysm of the superficial femoral artery was diagnosed but the patient refused to be operated on, so was kept quietly in bed. On Oct. 13th, a fortnight after admission, he had severe cramp in the calves of both legs and the swelling was found to be increased greatly and very painful. He now consented to undergo an operation which was immediately undertaken.

The operation was performed under ether on Oct. 13th by Mr. Wright. A vertical incision about one and a half inches long was made, with its centre about one inch below Poupart's ligament. An artery, which was supposed to be the common femoral, was isolated and tied with double ligatures and a "stay knot." The tumour was still found to be pulsatile and on dissecting deeper another large artery was found. This was evidently the profunda, which was abnormally large and came off very high up, so that the artery first tied was the superficial femoral, not the common femoral. A ligature was passed round the profunda but not tied as pulsation had now ceased. The wound was closed and dressed and the patient was put back to bed with the leg wrapped up in cotton-wool and hot bottles were placed round it. The circulation in the toes was well maintained though pulsation in the arteries about the ankle could not be felt. On the 16th the ligature round the profunda artery was removed and on the 20th the sutures were removed, the wound being quite sound. The swelling in the thigh, however, had not gone down, though there was no pulsation to be felt in it. By Nov. 12th the swelling was softer but had not gone down in size, so an elastic bandage was applied with cotton-wool over the swelling. The patient refused to have another operation performed, so was sent to the convalescent hospital, the swelling in his thigh being then as large as on admission though not so hard and not pulsatile.

On Jan. 27th, 1904, the patient was readmitted as an urgency case, the thigh now measuring 24½ inches, as against 21½ inches when first admitted. The consistence was uniformly hard and elastic without any pulsation. There was slight œdema of the leg below the knee. No enlarged glands were present in the groin or the abdomen. There was no cough, hæmoptysis, or hæmaturia. The patient was pale and had evidently lost flesh since his discharge. The general diagnosis was sarcoma though Mr. Wright stuck to his original diagnosis of aneurysm.

Operation was performed on Jan. 29th by Mr. Wright. A vertical incision was made into the mass which proved to be a large aneurysmal sac containing old blood clot. After the clot had been cleared out some oozing took place from the walls of the sac; the profunda artery was ligatured but as this did not stop the oozing another incision was made above Poupart's ligament and the external iliac artery was found and ligatured with double ligatures with a "stay knot." The second incision was closed with sutures and the sac was stuffed with iodoform gauze. The patient was put back to bed with the leg well wrapped up in cotton-wool and hot bottles placed round it. He did well after the operation, circulation in the foot being well maintained. A week after operation the stitches in the upper wound were removed and the packing was changed in the lower one. Unfortunately the lower wound became septic but cleared up in a few days under fomentations. The wound in the sac gradually healed and on March 4th the patient was discharged to the convalescent home with only a small sinus. He was seen in April with the wound quite sound. In July he returned; the site of the aneurysm was satisfactory, but he had apparently had an attack of cellulitis following thrombosis about the ankle. This had given rise to extensive suppuration in the leg and disorganisation of the knee-joint. Amputation was refused and he left the hospital in spite of all persuasion.

Remarks by Mr. WRIGHT.—There were certain difficulties in this case which perhaps justify its record. It was difficult to persuade the man that his condition was serious and he

repeatedly expressed his wish to go home and to resume work. The high level of division led to the error of supposing that the common femoral artery had been tied when in truth the ligature had been placed round the superficial artery. The first operation was ultimately done as an urgency as it was evident that the aneurysm was "leaking." Pressure was tried before the second operation at the suggestion of Mr. Southam who kindly saw the case. The second operation was advised as no progress was being made in the process of absorption of the clot in the sac and the leakage from both apertures in the sac led me as a precaution to tie the iliac artery. In each case a "stay knot" was used and the ligature was drawn only tight enough to occlude without rupturing the coats of the artery.

ROYAL BUCKINGHAMSHIRE HOSPITAL, AYLESBURY.

A CASE OF PRIMARY EPITHELIOMA OF THE PINNA WITH UNUSUAL CLINICAL FEATURES.

(Under the care of Dr. JAMES SHAW.)

FOR the notes of the case we are indebted to Dr. J. Fortune, house surgeon.

A man, aged 75 years, was admitted to the Royal Buckinghamshire Hospital on Sept. 23rd, 1903, his complaint being a fungating ulcer of the left ear. It commenced as a wart 20 years previously without assignable cause. It was treated by antiseptic lotions and astringent ointments but it nevertheless had progressed and for the last four weeks it had been exposed to x-ray treatment without benefit. The patient's previous health was good and the family history was negative as to malignant disease, tuberculosis, or syphilis; there was no cachexia. The man was remarkably healthy looking for his age, some atheroma and tortuosity of vessels being the only departure from health. Locally there were burning and itching sensations but no pain or deafness and there had never been loss of sleep. The left pinna externally presented a large fungating ulcer, crateriform, with foul turbid discharge, hard irregular base, and heaped-up edges, the lobe alone being uninvolved, while the margin of the helix and the whole cephalic surface were entire. The pinna was three-quarters of an inch thick and the surrounding skin for one inch was hard, red, and brawny, but no glands could be felt, either pre- or post-auricular or post-mandibular. On Sept. 30th Dr. Shaw removed the ear at its base, the stump being dressed with saturated solution of potassium permanganate, and in two days the surrounding infiltration was gone and the skin was soft and moveable. Microscopical examination by the Clinical Research Association showed the case to be one of squamous epithelioma not infiltrating the cartilage but extending deeply by processes which showed no cell nests. The patient was discharged on Nov. 4th.

Remarks by Dr. SHAW.—Primary epithelioma of the auricle is rather rare and this case presents one of the marked features of epithelioma—its extreme chronicity. The effects of the x-ray treatment were extremely unfavourable, so much so that the patient who had previously resolutely rejected operation soon gladly yielded his consent. A saturated solution of permanganate of potassium was employed to swab the surface after operation and as a dressing with a view to oxidise the tissues. It appeared to answer well and gave no pain, the sole objection being the discolouration which it produced.

THERAPEUTICAL SOCIETY.—An informal meeting of this society was held in the gardens of the Royal Botanic Society, Regent's Park, by the permission of the secretary, Mr. J. Bryant Sowerby, on July 26th. Dr. F. de Havilland Hall was in the chair and 15 Fellows of the society attended the meeting. Dr. T. E. B. Brown, the secretary, showed some specimens of the seeds of sapota cedron sent by Mr. J. H. Harte from Trinidad and some Chinese medicinal roots from Miss Florence Cooper of Lo'nguong city, Foochau, China, both persons being corresponding Fellows of the Therapeutical Society. Mr. Bryant Sowerby showed various specimens of medicinal plants and drugs and also a very fine plant of the Victoria regia in full bloom, likewise numerous medicinal plants and trees growing in the gardens. The Fellows present afterwards had tea in the club in the gardens.

Reviews and Notices of Books.

Aspects of Social Evolution: First Series, Temperaments. By J. LIONEL TAYLER, M.R.C.S. Eng. With Ten Illustrations. London: Smith, Elder, and Co. 1904. 8vo, pp. 297. Price 7*s.* 6*d.*

Mr. Tayler has produced a volume of highly interesting and original character, well calculated to induce reconsideration of many stereotyped opinions and commonly accepted views. It is intended, he tells us, to be the precursor of two more, in which the principles laid down in the first will be still further developed and in which their practical applications to the events of life and to the conditions of society will be more fully considered. In such circumstances the time for detailed criticism has perhaps scarcely arrived and the reviewer may be content to supply such an account of the first portion of the work as may induce those interested in its subject matter to procure and to study it for themselves. It may be said, without fear of contradiction, that Mr. Tayler is profoundly dissatisfied with the structure of modern society and that almost his only hope for its future is based upon an expectation that those who may comprehensively be called the middle classes will before long undertake its regeneration. For these classes, the high priests of Matthew Arnold's "Philistinism," he has no comprehensive epithet, but he displays great confidence in their dormant powers and at least a good-natured tolerance of their weaknesses. He tells us that the refuse of social activity exists in the upper as well as in the lower layers of civilisation and floats to the top as frequently as it tends to sink; and on the basis of this assertion he describes the useless rich, the "smart set," the personages whose claims to respect are only "feudal" in their character, and the whole gang of speculators, company promoters, swindling advertisers, and so forth, as the "scum," while the "submerged" of modern philanthropy are the "dregs," of the social system. The subservience of the middle classes to the "scum" and their tolerance of the oppression of talent by wealthy incapacity constitute, in his judgment, greater evils and more serious impediments to national progress than any conditions which arise from the "dregs" of the population. On these points the author may be allowed to speak for himself, as in this way our readers will be able to judge at once of his views and aims:—

"Before everything, it is absolutely imperative rightly to classify and label that which we see around us. The House of Lords is clearly mainly a barbaric survival of a barbaric age, a persistent feudal institution having a social value *proportionate to the feudal element still remaining in the population*, and beyond this of insignificant importance, except for certain parasitic qualities which it has acquired.

The House of Commons, since a monetary qualification is the most important essential of membership, is largely representative of wealthy interests in the nation, and in no sense fit to discuss authoritatively those greater life questions which require greater mental powers to adequately appreciate them. It is, therefore, mainly a commercial institution tainted with the lower morality and the superficiality of commercialism and uncontrolled by greater life ideals.

The Catholic and Protestant religious organisations are to an even greater degree little more than survivals. Their religion is dead, and a new one fitted for our greater needs must spring up before these bodies can ever be national again, and inspire creative emotional life to fresh effort. While science and philosophy have been in the main antagonistic to their dogmas for centuries, this ought not to be, for truth ought to be worshipped and not apathetic priest-craft.

It is necessary, therefore, to look to the great leaders outside these recognised institutions, to the intellectual and emotional forms of genius which appeal to the *cultured* and independent middle-class portion of the nation; to those, in fact, who are the acknowledged inspirers of men and

women who are neither enervated and corrupted by wealth nor made coarse or despondent by privation.

At present, owing to the *relatively* unfit occupying posts of importance in the State, views too crude to merit serious treatment are discussed and tolerated, and the general public have become so bewildered that they either look upon all as experts or believe all to be alike valueless, for position does not signify capacity.

The tendency manifest among the richest and poorest classes to pass judgment on the most diverse and technical subjects with little or no previous study is a disgrace to modern methods of life. Some unscrupulous shrewd stock-broker, whose sense of morality is little, if at all, higher than some less intellectual criminal sentenced in our law courts, may express his views on justice without the least fear of public opinion. A cabinet minister, holding his position mainly on account of the possession of great wealth and unjust class influence, without even any proof of talent in his own field, may freely criticise some great naturalist of giant powers and immense patience in observation without running the smallest risk of losing his unearned reputation; nay, worse, ignorant people may seriously think that his statements have some weight.

As in thought, so in emotional power, the vulgarian, whether rich or poor, should not be permitted to stand among cultured high-feeling people on an equal footing. It should be quite impossible for those who are incapable of valuing what is beautiful to intrude their lower standard upon those who can. Good music, good art, is debased by being placed in a lower atmosphere, and lower people must first be raised to a higher level before they have a right to claim that the nobler aspects of life should be free to them."

Together with these views about existing social conditions, views kindred to those of Faraday in relation to presumptuous judgment and perhaps capable of illustration by the manner in which newspapers used to report Mr. Gladstone's speeches about jam, Mr. Tayler holds that the harmonious development of the human creature is only possible in an environment adapted to the "temperament" of the individual, and he describes "temperament" as the outcome of the collective gland activities of the body. He believes that large numbers of persons who would be capable of good work in an environment adapted to them are practically extinguished by adverse circumstances and he regards the study of "temperament" as an essential condition of social reform. As one means thereto his book is furnished with some excellent and carefully drawn illustrations of "types," for which he acknowledges indebtedness to Miss Tayler. We regret to be compelled to add that the book is very unequally written and we only do so in the hope that the question of style may receive more attention in the promised future volumes. In the one before us there are passages which scarcely fall short of eloquence, but there are also many sentences that are inelegant and many that are obscure. In some of the latter, indeed, the best consideration which we have been able to give to them has left us in some doubt as between two possible meanings.

A Practical Guide to the Administration of the Nauheim Treatment of Chronic Diseases of the Heart in England. By LESLIE THORNE THORNE, M.D., B.S. Durh., M.R.C.S. Eng., L.R.C.P. Lond., Medical Examiner to the London County Council Technical Education Board. London: Baillière, Tindall, and Cox. 1904. Pp. 53. Price 2*s.* 6*d.*

IN his preface Dr. Thorne explains that much of the subject-matter of this book is taken from articles written by him that have already appeared in the columns of THE LANCET. Dr. Thorne maintains that the "Nauheim treatment" of chronic diseases of the heart when practised in this country may be so regulated as to produce results in no way less satisfactory than those obtained at Nauheim. In this small work he gives details as to the constitution, temperature, and duration of the baths and the directions being by no means involved should not be difficult to follow. Hitherto this treatment has only been submitted to a thorough trial by comparatively few practitioners and the results have been by no means uniform. Further investigation is therefore required before any definite conclusions can be arrived at. In discussing the exercises introduced by the brothers Schott, Dr. Thorne expresses the opinion that they cannot be properly learnt from diagrams or written descriptions, and on this point we perfectly agree with him. It is to be regretted that directions are not given as to the general *régime* which is to be followed by the patients. Great stress is rightly laid upon this point at Nauheim and in the opinion of many physicians the regularity of the life insisted on has a great influence on the success of the treatment. Emphasis is laid on the selection of suitable cases for the treatment, and this is right for discredit has been undoubtedly cast on the use of baths and exercises in cases of chronic diseases of the heart owing to the subjection of unsuitable cases to a therapeutic measure which may prove not only useless but even harmful. The cases which yield the best results, according to Dr. Thorne, are those in which the heart has become enfeebled and irritable as a consequence of influenza, or in which the cardiac symptoms are due to excessive smoking or prolonged illness such as typhoid fever or malaria. The group of cases which are unsuitable for treatment comprise patients who are, or who have been, habitually heavy drinkers and also those who are suffering from advanced degeneration of the walls of the vessels and those who exhibit typical symptoms of aortic regurgitation. This small book contains many useful suggestions.

Colony of Natal: Report of the Health Officer for the Year 1903. Pietermaritzburg: *Times* Printing and Publishing Company, Limited. 1904. Pp. 38.

Dr. E. Hill's second annual report of the Department of Public Health of Natal for the year 1903 draws attention to the alterations and additions that have been made in the original Public Health Act of 1901, amongst which especial stress is laid upon an order requiring the owners of property to take the best means of preventing the occurrence of infectious disease on their premises, failing which they will forfeit all claim to compensation for any loss or damage. The importance of this addition has reference especially to the measures necessary to exclude rats from dwellings in respect to plague. The Board of Health has also been given power to declare unfit for human habitation any barracks within reasonable distance of which a supply of "drinking" water is not available. Dr. Hill with reference to this rightly states that the words "pure and wholesome" would be preferable to "drinking" in describing the quality of the water. Passing to general sanitary matters the standard of sanitation is held to be far from satisfactory. Thus the shops in which articles of food are sold are anything but wholesome; aerated waters are inefficiently filtered; and milk is sold in bottles the nature of which renders proper cleansing impossible. There are want of surface drains, inefficient removal of night soil, and many other objectionable features. The population is largely unvaccinated though here improvement is taking place. As a consequence of this state of affairs 33 per cent. of European deaths have been caused by preventable diseases in 1902 and 1903, of which 6·8 per cent. were attributable to enteric fever and 17·2 per cent. to dysentery. In the section dealing with enteric fever the author lays stress on the advisability of distributing leaflets drawing attention to the need of boiling water and milk and protecting food from dust and flies. Attention is also directed to the necessity of the proper disposal of the fæces and urine and the immediate disinfection of all such matters and also of articles used by the enteric fever patients, and to insure this the householder must be educated by means of printed instructions issued to him.

Tuberculosis is said to be increasing amongst natives in the colony—a fact not surprising when we read of the

conditions under which they live. And with regard to the disease it is pointed out that European immigrants, with a physique much reduced by tuberculosis and incapable of finding suitable work and wholesome food on arrival, are a grave source of danger to the persons with whom they associate. Such persons on whom pulmonary tuberculosis has taken firm hold should be deterred from going out to the colony or, at any rate, a sanatorium should be erected to which they might go on first landing for a short stay for the purpose chiefly of being educated as to their mode of life with reference to their disease. The birth-rate amongst Europeans was 29·31 per 1000; the death-rate was 12·90, against 14·40 for 1902, showing a reduction of 1·50 per 1000. As regards the excessive mortality in certain estates and mines which was brought to notice last year this has improved, the mortality figure having fallen well below the mean. Included in Dr. Hill's report are those from the health officers of various towns and districts of the colony. The whole volume gives us a concise account of the vast amount of good work that is being carried out by our countrymen in South Africa.

Social Diseases and Marriage: Social Prophylaxis. By PRINCE A. MORROW, M.D., Emeritus Professor of Genito-Urinary Diseases in the University and Bellevue Hospital Medical College, New York. London: Sidney Appleton. 1904. Pp. 390. Price 15*s.* net.

THE dissemination by marriage of venereal disease involves consequences which affect the health of the contracting parties, the lives of their children, and the peace, honour, and happiness of the family. The important relations of gonorrhœa with marriage have been practically ignored by the medical profession until lately; but we now know that in view of the extensive prevalence of the gonococcus, its conservation of virulence after apparent cure, and its tendency to invade the uterus and adnexial organs, with results often dangerous to life and destructive to the reproductive capacity of the woman, gonorrhœa overshadows syphilis in importance as a social peril. It is the object of the writer of this work to set forth the dangers introduced by venereal diseases into marriage and to indicate the most effective means to prevent these dangers or to limit and circumscribe their spread. This protective duty, which has for its object the preservation of the helpless and innocent from infection, devolves upon the physician in his capacity as sanitarian and guardian of the public health. In safeguarding marriage from the dangers of venereal diseases the physician becomes the protector of the wife and mother and the preserver of future citizens to the State. The situations created by the introduction of venereal diseases in marriage are many and complicated; in dealing with these situations there must be not only a thorough knowledge of these diseases in all their relations but also a knowledge of human nature.

The book is divided into three parts. The first part deals with the biological, sociological, and medical aspects of the whole question, including humanitarian considerations, and pointing out the consequences of venereal diseases when introduced by marriage upon the wife and the offspring. The social miseries thus engendered are detailed as well as the attitude of society towards these evils and the responsibility of the medical profession. The second part treats of syphilis and marriage and the third part discusses fully social prophylaxis. The author supports Neisser in his contention that gonorrhœa is a more potent factor in the depopulation of countries even than syphilis. Neisser regards gonorrhœal infection as responsible for more than 45 per cent. of sterile marriages. In the section on Social Prophylaxis the causes of prostitution are examined and certain remedies are suggested, special prominence being given to moral and educational influences, which promise to be the most efficient and are at the same time immediately available.

The most practical question discussed is when a physician may permit a man to marry who has previously contracted gonorrhœa or syphilis. In general terms it may be said that the duration of the period of prohibition is measured by the period during which the diseases are contagious and transmissible. In the case of gonorrhœa the risks of contagion may, the author holds, be determined with comparative certainty by a bacteriological examination of the urethral secretions. If gonococci are present the patient should not marry; if absent he may. While observation shows that in the large majority of cases the contagious activity of syphilis and its susceptibility to hereditary transmission cease after the third or fourth year, the arbitrary designation of a period of four years from the first appearance of the chancre, as being perfectly safe for a syphilitic man to marry, irrespectively of the type of the disease or the character of the treatment, is unwarranted by science and condemned by clinical experience. Each case must be studied on its individual merits. It is chiefly in the nervous system that search must be made for the indications which point to a grave and menacing character of the syphilitic diathesis.

Though primarily intended for the medical profession, there are several parts of the book which may be studied with the greatest benefit by the public. Most important questions are answered in it on sensible lines, questions that are constantly being asked of the family medical adviser who will find in these pages much that will strengthen his opinions and add to their value.

LIBRARY TABLE.

A Few Notes on the Bacteriology and Pathology of Mediterranean Fever. (Reprinted from the "Health of the Navy" for 1902.) By R. T. GILMOUR, Surgeon, R.N., M.R.C.S. Eng. Pp. 10.—Mr. Gilmour has been attempting to isolate the micrococcus Melitensis from the blood and urine of patients suffering from Mediterranean fever for the following reasons: (1) that in wet specimens of these fluids he had come across very small motile cocci; and (2) that he did not see how the coccus could reach the liver and spleen without passing through the blood stream. After experimenting with small quantities of blood and media he concluded that large quantities of both must be used so as to dilute down the agglutinins and alexins. At first he obtained the blood from men with bad attacks of fever; later he cultivated the coccus from the blood of patients suffering from relapses. Out of 14 cases experimented with a pure culture was obtained from seven; three, although containing small cocci, would not give any growth and five were contaminated. Mr. Gilmour gives a short clinical history of each case. He states that the earliest date at which the serum will agglutinate after inoculation is doubtful in man. With regard to what is the lowest dilution that may be accepted as a positive reaction in Mediterranean fever he thinks that if a serum gives a good reaction $\frac{1}{10}$—that is to say, well-marked clumping—it may be taken as a positive reaction, especially if the agglutination is immediate or within half an hour. The highest dilution in which he has obtained a reaction is $\frac{1}{2000}$. The paper closes with post-mortem notes on four cases of Mediterranean fever.

Ueber den Schluckmechanismus. (On the Mechanism of Swallowing.) By Professor J. SCHREIBER, Königsberg. With 22 figures and two plates. Berlin: A. Hirschwald. 1904. Pp. 92. Price 3*s.*—This dissertation on the mechanism of swallowing is an amplification of some papers on the same subject that appeared in vol. xlvi. of the *Archiv für Experimentelle Pathologie.* The experiments of

Kronecker and Meltzer in 1883 on the swallowing of fluid and semi-fluid masses had apparently at last brought something like a settled statement regarding this act, which since the time of Haller has been considered as one difficult of explanation. Finality is not yet reached, for Professor Schreiber does not agree with Kronecker's view that the mylohyoid by its contraction is the chief agent by means of which fluid and semi-fluid matter is "shot down," almost squirted, from the mouth into the stomach. By means of careful experiments on man and by recording the movements of an object while it is being swallowed and by taking at the same time a record of the changes visible in the neck —the latter the author calls a "deirogram"—it is concluded that many muscles are concerned and coördinated for the bucco-pharyngeal act. While the mylohyoid facilitates the swallowing movement it does not begin the reflex act. The whole act of swallowing is compared to the phases of a cardiac beat and a diagram is given to show the stages and their duration. The actions of the constrictors of the pharynx and œsophagus are fully given and it is shown that the term "cardia" in the physiological sense should be applied to the lowest part of the œsophagus; it is rather an epicardia which closes the œsophagus towards the stomach. The author concludes that the force expended in the act of deglutition in man is very slight. This suggestive work will beget reinvestigation of the subject.

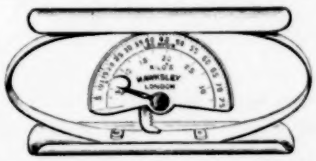
Easily Grown Hardy Perennials. By GEORGE H. VOS, M.B. Cantab. London: W. H. and L. Collingridge. Pp. 476, illustrated by 255 reproductions of photographs. Price 5*s*.—To those who have gardens and love flowers and have but little time to devote to gardening, the cultivation of hardy perennials affords pleasurable and delightful results with a minimum of trouble. Moreover, hardy perennials can mostly be propagated with ease by simple division and many require but little care, it suffices to leave them in the ground year after year. Indeed, we learn that Dr. Vos has in his garden quite 200 different species of hardy perennials, which reward him with fresh flowers all the spring, summer, and autumn, and this practically without any digging or planting. Dr. Vos has been very successful with the photographs illustrating his work, as the result of special treatment the flowers stand out in bold relief. And he has been no less successful in making quite clear to the amateur what he is to do, and how and when he is to do it, if he would provide outdoor flowers during almost the whole of the year.

New Inventions.

A STANDARD DYNAMOMETER.

THE old dynamometer of Duchenne has given place entirely to the oval form of Charrière. It is now supplied by many instrument makers and it is rare to find that any two dynamometers of similar aspect correspond in their results. They are still made with two scales, each in kilogrammes, but I think that not more than one person in a hundred of those who use such an instrument know that the outer scale is alone intended to represent the effect of pressure in the hand. The inner scale is designed to indicate the effect of traction from the two ends of the oval spring; it is practically never used for this purpose, for which it is indeed useless, because no effort thus applied can move the index through a fifth of the scale. The divisions on the inner scale really represent the effect of pressure. But the result is that some observers record from the outer and some from the inner scale without concerning themselves with the fact that 40 kilogrammes of the inner scale correspond to 105 of the outer. This, with the variations between different instruments, destroys all possibility of comparison between records. The ordinary form of this dynamometer is also most uncomfortable in use; a strong grasp is often painful.

In the new instrument discomfort is prevented by a straight hollow piece of metal, semicircular in section, on each side of the oval spring, so that any force can be applied to it without discomfort. It has a further advantage in preserving the index from interference by the fingers. A still more important feature which justifies the term

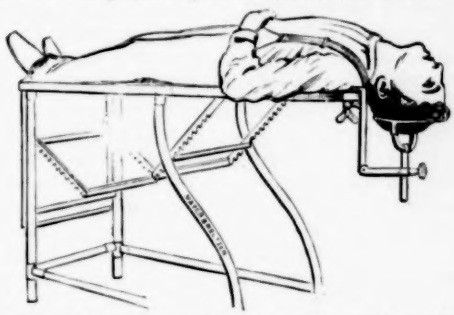


"standard" is that every instrument is separately graduated and the scale specially engraved on each. It is clear that only thus can trustworthy and comparable observations be secured. No attempt to produce a number of similar oval springs can result in instruments closely or even approximately the same. Every instrument for clinical observation should possess as much exactness as can reasonably be obtained and I think that this will be found true of the "Standard Dynamometer," which is made by Mr. T. Hawksley of Oxford-street.

Queen Anne-street, W. W. R. GOWERS.

A HEAD-REST FOR POST-NASAL OPERATIONS.

I HAVE found the head-rest here figured most convenient in the removal of post-nasal growths and for operations within the nostrils. The "hanging head" position over the end of the table, as ordinarily maintained, in my opinion seriously impedes respiration owing to the extremely strained condition of the anterior neck muscles. My head-rest overcomes this difficulty and dispenses with the need of an assistant to steady and to support the patient's head. The operator sits at the end of the table, beyond the patient, and does his work in a more deliberate, satisfactory, and safe manner than is possible by other methods, while at the same



time the risk from any anæsthetic is considerably diminished. (Personally, I prefer chloroform.) The head-rest is easily clamped on to the end of an ordinary kitchen table, while the "rest" itself may be quickly raised and lowered. It should be kept low to allow of full extension of the neck. A towel thrown over it after it is fixed in position will prevent soiling by blood. The whole apparatus is in parts for convenient portability in one's bag. It will also be found useful in operations on the roof of the mouth and upper jaw, in excision of the larynx, and in endoscopic examination of the œsophagus. I have designed for ready use with the head-rest a simple folding chloroform mask on which a fresh piece of lint or domette may be clamped at each operation. The head-rest has been made for me by Messrs. Mayer and Meltzer of London and Melbourne.

Melbourne. FRANK A. NYULASY.

THE LANCET.

LONDON: SATURDAY, AUGUST 6, 1904.

The British Medical Association: The Address in Surgery.

IN the Address in Surgery Sir WILLIAM MACEWEN discussed two separate subjects upon which he was well qualified to speak. In the first place he discoursed on the localisation of abscess of the brain, pointing out that the view formerly held that cerebral abscess was generally pyæmic in origin implied that it was produced by embolism of infected portions of clot. It is true that an abscess of the brain can result in this manner but it is very exceptional, for in the great majority of instances the septic cerebral processes arise by direct extension from primary pyogenic lesions of the skull bones. The recognition of this fact gives the surgeon great assistance in diagnosing the position of an intracranial abscess, for if the position of the primary septic focus is known the situation of its dependent abscess must be limited to a comparatively small portion of the brain. Thus, if, as is very commonly the case, the primary focus is disease of the middle ear the surgeon can be certain that the resultant abscess, if symptoms point to an abscess, will be found in the corresponding temporal lobe or in the cerebrum in touch with the infected path. We now know that if the septic organisms enter the cranial cavity by way of the internal auditory meatus they will give rise to a basal meningitis and not to an abscess; at least it may be said that it is extremely rare for a cerebral abscess to follow septic invasion of the cranial cavity by this path. The explanation of the fact that meningitis follows sepsis of the internal auditory meatus is that the expansion of the membranes of the brain, which ensheaths the nerves in this canal, dips into it, and thus the meningitis first appears in the meatus and thence spreads to the base of the brain. In this connexion it is of great interest to note that basal tuberculous meningitis may be the result of extension of disease from the middle ear along the same tract, the tubercle bacilli spreading from the middle ear along the internal auditory meatus to the membranes of the brain. There is yet another way in which tuberculosis of the middle ear may threaten life. The tubercle bacilli may surround and invade the neighbouring sigmoid sinus and thus may be carried all over the body, setting up a miliary tuberculosis.

A second subject dealt with by the lecturer is of no small practical importance. It is the question of the most suitable materials for ligatures and sutures. The diversity of practice in this respect is exceedingly great and the surgeon has a very wide choice. Silk and catgut have been before the profession for many years and both still are widely used. Metallic sutures were much in vogue 20 years ago but they are very little used at present for anything but suturing bones, and it is rarely indeed that silver stitches are used for the skin. Kangaroo tendon was introduced and it is even employed now by many for special purposes, as in the radical cure of hernia, though it is rumoured that much of the material sold under that name is derived from the more obvious ox. More recently silkworm gut has been brought forward and is now very largely used, especially for skin sutures. Threads composed of linen and cotton have also been praised but they are very little employed in this country. There are many considerations which should weigh with surgeons in the choice of ligatures and sutures. The first is undoubtedly that the material of which they are composed should be capable of being rendered absolutely sterile, for if this cannot be done any other virtues which they may possess are of no effect. As Sir WILLIAM MACEWEN points out, there are two other requirements which ligatures and sutures should fulfil. They should be capable of resisting absorption as long as is needed for the complete union of the surfaces which they hold in contact, whether these be the edges of a skin wound or the walls of an artery which has been tied, and they should then be capable of speedy and complete absorption when their work is done. For if, as in the case of a silver suture, the stitch resists absorption indefinitely, or even for a long time, it can only act as a foreign body, harmless perhaps as it is aseptic, but also useless and always liable to set up irritation. The mere presence of an aseptic body in the midst of living tissues tends to cause absorption of the surrounding structures and in this way also harm may be done by persistent ligatures and sutures. The edges of wounds in the skin in healthy subjects usually require to be maintained in contact from seven to 14 days, but this is only if there is no tension, for if there be any force tending to separate the edges of the wound a longer time will be required. Where the suture has to overcome the force of muscles or tendons at least three weeks should be allowed. In the case of bones still longer is required to insure complete consolidation, for the forces which have to be overcome are much greater, especially when leverage is brought to bear on the suture, as in long bones; therefore, about four weeks are needed in the case of most sutures of bones. Even in bone, however, after a certain time the constricting band ceases to maintain contact between the fragments, and unless bony or fibrous union has occurred the suture will not prevent the separation of the fragments. Applying these desiderata to the materials in common use we find that silk is for all practical purposes non-absorbable. Silkworm gut and hair are not absorbed at all, and have been removed even seven years after having been introduced and when examined microscopically they have shown no sign of even commencing absorption. The lecturer, after discussing other materials which have been employed, came to the conclusion that only catgut answers the needs of the surgeon. It must be selected with care, as possessing the needed strength and smoothness. Further, the process of hardening must not prevent that invasion of leucocytes which is necessary for its absorption. A mixture of glycerine and a watery solution of chromic acid seems to answer best as a hardening agent; the gut produced is

soft and pliable and the resistance to absorption can be increased or diminished, so that the time it shall persist in the tissues can be regulated with a great degree of accuracy. It may be stored in a carbolised glycerine solution and in the course of months or years its resisting power tends to increase.

The rate of absorption of catgut sutures varies somewhat, according to the nature of the tissues with which they are in contact. Should the part be very vascular the piece of catgut will undergo absorption rapidly, but if the tissues possess only a few vessels the rate of absorption will be markedly less. Age, also, as might be expected, has an influence, and in the young the rate at which the catgut is absorbed is appreciably greater than in the old. When a suture is tied too tightly the rate of absorption is much diminished, but the suture by its pressure leads to absorption of the compressed tissues. Should a stitch become septic it will be absorbed with extreme slowness. By the use of absorbable sutures it becomes unnecessary to disturb a dressing for the removal of sutures after they have served their function, for the part of the suture within the tissues will be absorbed and the part outside will fall off when the dressing is finally removed. It will be seen upon reference to Sir WILLIAM MACEWEN'S address, which we publish in another part of this issue, and from the remarks that we have made upon it, that the lecturer did not so much attempt to tell the audience new things as to impress upon them broad lessons in diagnosis and minor details in treatment that will be of practical service to them.

Infantile Mortality.

MR. J. THEODORE DODD, in a recent issue of the *Municipal Journal*, has approached a very interesting problem in sanitation and vital statistics by the suggestion that high rates of infantile mortality are intimately connected with the policy of certain boards of guardians in confining outdoor relief, even medical relief, within the narrowest possible limits; and he puts forward some figures which, at the very least, appear to render his contention a probable one. He quotes Sir WILLIAM CHANCE as his authority for the statement that in St. Pancras, by merely insisting upon applicants for medical orders attending before the relief committee of the South District, their numbers went down from 4246 on Dec. 31st, 1899, to 2280 on the same day in 1901, a reduction of 46 per cent. in two years only. If Mr. DODD'S views are correct, and if any reliance can be placed upon a single example, we ought to have here a case precisely in point. According to the returns furnished to the London County Council by its medical officer of health, Mr. SHIRLEY F. MURPHY, the infantile mortality of St. Pancras—that is to say, the deaths of infants under one year of age—averaged 157 per 1000 births for the ten years 1885 to 1894. For the six years from 1893 to 1898 inclusive the numbers per 1000 births were respectively 172, 145, 174, 168, 168, and 170, or an average of 166. We do not learn when the curtailment of medical orders was commenced but it was operative during 1901, in which year the infantile deaths per 1000 were only 154, and we may presume that it was also operative during 1902, when the number fell to 147, the lowest so far recorded. We cite these figures, not as justifying a conclusion either way, but as showing that other factors must not be omitted from consideration. Mr. DODD gives a list of metropolitan unions, with a word descriptive of the policy in respect of outdoor relief adopted by each in 1902, but he does not tell us how long that policy has in each case been pursued. He gives also the infantile mortality in the same unions for the ten years 1881–90 from the Registrar-General's returns and the table, as a whole, certainly displays the connexion which he thinks may be established. For its completion it obviously requires a statement in each case as to how long the "outdoor" or "indoor" policy has been predominant, to what extent it has extended to orders for medical relief as well as to relief of other kinds, and what was its immediate as well as its ultimate effect, if any, upon the infantile mortality within the union. Tables containing these facts would also require correction by reference to infantile mortality in hospitals or institutions and to the localities in which the fatal illness commenced or was contracted, as well as by an examination of the current rates in these localities and of the probable explanation of them. The tables furnished by Mr. SHIRLEY MURPHY present not only a curious sameness of infantile mortality in many districts but also fluctuations which break this sameness and for which it is by no means easy to account. Thus, for example, the infantile mortality of London as a whole stood for many years at about 160, but in 1893 it fell to 143 and immediately thereafter rose to the customary point. With the beginning of the present century it again fell and in 1902 was only 139. The question is complicated by the adoption of new district boundaries which render the tables of former years difficult of comparison with more recent ones; but, with all due allowance for this source of confusion, there seem to be many anomalies difficult of explanation. The Strand union is described by Mr. DODD as having a decidedly "indoor," and the Holborn union as having a "slightly indoor" policy and a comparison between the two does not support his suggestion. From 1885 to 1894 the average infantile mortality of the Strand was 200, and that of Holborn was 204 per 1000. The former had fallen to 171 in 1898, the latter rose in the same year to 221 and has since fallen to 129. Verily, Sir ROBERT PEEL'S famous dictum should be remembered and we must admit with him there is nothing so misleading as facts, except figures.

Our chief difficulty in accepting Mr. DODD'S opinion that a scanty issue of orders for outdoor medical relief may be productive of infantile mortality depends upon a doubt how far such relief is likely to be efficacious in the treatment of infantile disease. If the same proposition were advanced with regard to adults we should think it a probable and reasonable one. But the diseases of infants are largely due to want of breast-milk, to scanty and improper feeding of other kinds, to exposure to cold, to life in a vitiated atmosphere, and, generally speaking, to conditions against which their tender frames are unable to strive. Such conditions would seldom be relieved by a visit from the medical man, and the advice which it would be his duty to give with reference to them would only in a very few instances be effective. For the

action of medicine in such cases there is but little scope and removal to a hospital would seldom be practicable. The function of the medical man would almost be limited, we greatly fear, to certification that the death was so far due to natural causes as not to reach the current standard of criminality. We should be inclined to regard at least as an enthusiast any person who really expected the visits of the parish medical officer, even if he were obtainable without the formality of an order at all, to exert any powerful influence over the rate of infantile mortality in his district. The late Sir RICHARD QUAIN was once giving evidence as to the testamentary incapacity of the maker of a disputed will. In reply to the question what was the principal indication of insanity displayed by the deceased, he replied that it was "his unwavering faith in the efficacy of the medicines which I prescribed for him." This is occasionally quoted as a proof that the great therapeutist had no belief in the healing power of drugs. But the real significance of Sir RICHARD QUAIN'S remark was that it was unreasonable to expect drugs to do their full work when all the circumstances of the patient's environment were ranged against them. And thus it is in the matter of infantile mortality. It is not belittling the efforts of the parish medical officer to point out that neither his medicine nor his advice can operate effectively in many instances against the general causes of infantile mortality.

On the merits or advantages of the "indoor" policy as a whole we are not prepared to express an opinion; but in relation to the issue of orders for medical relief it might easily become exceedingly injurious to the poor and very costly to the ratepayers. It is true, of course, that there are among the poor, as among the rich, a large number of persons who suffer from some kind of gastric or abdominal discomfort which a little alkali and a dose of some cordial tincture will for a time relieve. Such persons are the chronic patients of every good-natured medical man, and the perpetual worries of every relieving officer. They probably receive no permanent benefit but their miserable lives may be made less miserable and they are proper objects of compassion. Very likely they are of indifferent character. They take a little gin if they can get it, and then, as Bishop EARLE says, to drink and to be drunk is all one. A measure of restriction directed against such people is hardly compatible with the exerciseof Christian charity. There is, however, far worse behind. The fact that a given board of guardians discourages the issue of medical orders and places difficulties in the way of applicants for them has a distinctly deterrent effect. Those who need them do not apply. The application is put off until to-morrow in the hope that the sufferer may be better. The morrow comes and he is worse. The natural result may be that a widow and orphans become chargeable upon the parish and for this the so-called "policy" is to blame. The claim of persons falling within any proper definition of poverty to a medical order should, we think, be absolute and indefeasible; and the duty of rejecting the applicants whose illnesses were trivial or unreal should be a distinctly medical one, to be discharged as a matter of professional responsibility. It cannot be safely committed to boards of guardians.

The Surgery of the Pancreas.

THE progress of surgery is regularly continuous. It is only now and then that we can note an advance that is really epoch-making, to use a much abused expression, yet steadily year after year the progress continues. There is a very natural tendency with most of us to imagine that we have at last reached finality or at least that we have come within sight of it. In many works of surgery the author expresses the feeling that much more cannot be done, inasmuch as we have reached the Ultima Thule of surgery. The late Sir JOHN ERICHSEN, a most able surgeon and philosophical thinker, has well expressed this feeling. He says in his "Science and Art of Surgery": "I cannot leave this subject without an expression of admiration at the great advance that has of late years been made in the treatment of diseases of the abdominal viscera by surgical operation and a recognition of the merits of those surgeons who have led the advance in this department of our art and of the vast importance of the results achieved by them. But whilst thus freely recording my admiration for the successes that have been obtained, I must add a few words of caution to aspirants for distinction in this great field of practice. I would venture to remind them that an operation is not necessarily justifiable because it is practicable; that every act of operative audacity is not a triumph of sound and legitimate surgery, and that a patient's life may possibly be prolonged on conditions less tolerable than death." And again: "Operative surgery, like every other art, can be carried only to a certain definite point of excellence. An art may be modified, it may be improved, but it cannot be perfected beyond certain attainable limits. And so it is, and, indeed, must be, with surgery. There cannot always be fresh fields for conquest by the knife. There must be portions of the human frame that will ever remain sacred from its intrusion—at least in the surgeon's hands." There is doubtless a strong element of truth in these sentences. Every modification is not necessarily an improvement; every new operation is not necessarily an advance; and in so far as Sir JOHN ERICHSEN'S words imply absolute disapproval of reckless surgery we can all endorse them as readily now as we did when they were written. But we must recognise that there are possibilities of progress invisible to us and that methods almost incredible now may become mere commonplaces to succeeding generations. In short, as no one can say what the "attainable limits" of surgery may be, the possibilities of surgery must remain unlimited.

In THE LANCET of July 9th, p. 106, we quoted a paragraph from THE LANCET of July 8th, 1826, in which Dr. CLUTTERBUCK in a lecture dealing with the diseases of the pancreas, delivered nearly 80 years ago, said: "Little need be said upon this subject because it is hardly possible to discover the existence of disease in this organ during life so as to distinguish it from that of the neighbouring parts." We have advanced very far from the state of knowledge exhibited in this excerpt both in the medicine and surgery of the pancreas, yet the greater part of this advance has occurred within the last ten or 15 years. For instance, in a valuable Dictionary of Surgery published in 1886 the word "pancreas" does not

occur as a heading. From the medical aspect various morbid conditions of this organ are now known, but most of the work on the subject is recent. Dr. W. HALE WHITE collected all the cases of disease of the pancreas found in the post-mortem examinations at Guy's Hospital during the years from 1884 to 1897. During this period there were 6708 necropsies and in 142 of these the pancreas was found to be injured or diseased—that is, in over 2 per cent. of all cases. We now know, from these observations and those made by many other physicians and surgeons, that the pancreas is liable to acute and chronic inflammation. Of these the more important seems to be the acute form, for with its violent onset, the severe abdominal pain, the marked constipation, and the vomiting it is very liable to be mistaken for acute intestinal obstruction, and in several cases the abdomen has been opened under the influence of this erroneous diagnosis. The pancreas is also liable to a peculiar condition of "fat necrosis" and this morbid state may appear even in tissues at a distance from the pancreas itself. Hæmorrhage in disease of this organ is also not rarely met with, especially in connexion with acute pancreatitis. Primary malignant disease of the pancreas may occur and is generally first manifested by the occlusion of the common bile-duct and the gland is also not rarely involved by the extension of malignant growths from other organs. Syphilis and tubercle may also involve the pancreas and calculi are occasionally found in the duct of Wirsung. Cysts of the pancreas are also not uncommon, though the name has been somewhat loosely applied so as to include a localised ascites of the lesser peritoneal sac and cysts of the transverse mesocolon and omentum. The columns of THE LANCET for the last ten years have borne witness to an increasing knowledge of the pathological conditions to which the pancreas is liable.

Although we are now acquainted with many varieties of pancreatic disease, it is an unfortunate fact that many of the conditions are but little amenable to treatment. Medicinal therapeutic measures are of almost no value, but surgery is capable of affording relief in some at least of these morbid states. The rise of the modern surgery of the pancreas may certainly be traced to the publication in 1885 of a paper on the Surgical Treatment of Pancreatic Cysts by Dr. N. SENN of the United States. This was the first systematic account of the pathology of the organ, and Dr. SENN showed that it was possible not merely to diagnose with a fair amount of certainty the existence of a cyst of the pancreas but also that it was possible to treat it by draining without any very great risk to life. This is the chief operation performed on the pancreas, and it has been now performed sufficiently frequently for us to look upon it as firmly established. For malignant disease of the pancreas surgery can do but little. It is true that portions of the viscus have been removed when affected by extension of disease in the operation of excision of neighbouring malignant growths; and, indeed, in 1884 BILLROTH removed a cancer of the pancreas and the operation was followed by recovery. RUGGE also has been equally successful, but diagnosis of the condition sufficiently early to justify the operation is so very unlikely that it can hardly be considered feasible, though there is nothing in the operation itself to prevent it being attempted. To relieve a few of the symptoms of malignant disease of the head of the pancreas, such as the biliary obstruction which is almost always present, something can be done. Cholecystotomy or cholecystenterostomy may be performed, and though the statistical results cannot be said to be favourable yet in a few cases relief has been afforded; and should a chronic pancreatitis have been mistaken for malignant disease of the pancreas it is not impossible that one or other of these operations may prove to be productive of permanent benefit, for gradually the occlusion of the ducts may cease and the normal channel being established the abnormal opening may close. Calculi, as we have mentioned, are sometimes found in the pancreatic duct and in structure these resemble the calculi of the submaxillary gland. They may be single or numerous—in one case 300 were discovered—and successful removals have been several times effected. Chronic pancreatitis has been recognised by Mr. MAYO ROBSON as a fit condition for surgical interference and success has attended the draining of the pancreatic duct in such cases. From all this it is clear that our knowledge of the pathology, diagnosis, and treatment of lesions of the pancreas vastly surpasses the knowledge of a few years ago. How much further medical science may proceed in this direction no one can say; but there are limitless possibilities in the future of surgery, and the gap between Dr. CLUTTERBUCK's knowledge and the knowledge of to-day may be smaller than the gap that will be found between our present teaching and the teaching of 80 years hence.

Annotations.

"Ne quid nimis."

NEWSPAPERS AND INCITEMENT TO CRIME.

IN the House of Commons on August 1st the Home Secretary was asked whether his attention had been called to a recent Old Bailey case of counterfeit coining in which the prisoner admitted that he had learnt how to make counterfeit coin from a full description of it in a daily newspaper by a criminal. Further inquiry was made whether, in view of the opinion expressed by the jury and by the Common Serjeant condemning the action of such newspaper, the Home Secretary could take any steps to prevent these incilitations of crime in future. The Home Secretary in his reply said that he had consulted the Common Serjeant, with whom he fully agreed as to the mischievous tendency of the article. He added that he considered the newspaper in question deserving of the gravest censure and that the whole question of incitement to crime by means of such articles is receiving the attention of the Home Office and of the Director of Public Prosecutions. This is good hearing and we earnestly hope that the phrase "receiving attention" is not a euphemism for shelving the question. We hope also that when the Home Office and the Public Prosecutor act they will act swiftly in one obvious direction. It is to the credit of the British press that incitements to crime seldom appear in the body of a journal, but the case is very different with the advertisement columns. All our readers will remember the numberless advertisements of pills or potions which, although they simply professed to cure "irregularities" in females, were really intended to be used as abortifacients. The insertion of such advertisements is a direct incitement to crime. And although, since our revelations and certain

criminal proceedings for blackmail, they have become much less frequent, offenders do still exist and are still able to find newspapers willing to abet them in their disgusting courses. It makes no difference that in the majority of cases the "female remedies" would have no effect either in restoring the menstrual flow or in procuring abortion. The harmlessness of the potions places the advertisers and the newspapers which insert the advertisements in this dilemma. Either there is an incitement to crime or money is being obtained under false pretences. Quite enough specimens of these advertisements have come before us recently to make it clear that interference by the Home Office is urgently needed, while there are other classes of advertisements to which the official attention might be turned. The various drink "cures" and recipes for the restoration of "vitality" are in some cases dangerous swindles, and light turned upon the methods of some of the advertisers would considerably surprise the public. Revelations made in a medical journal do not come within the purview of the victims.

"FOURTH OF JULY" TETANUS.

IN the *Journal of the American Medical Association* of June 18th of this year is a special article entitled "The Prophylaxis and Treatment of Fourth of July Tetanus." After the annual celebration of that anniversary a large number of cases of tetanus occur as a consequence of the premature explosion of blank cartridges and fireworks. Last year no less than 406 deaths from this disease took place as the result of accidents sustained on the "Fourth." A mortality of over 95 per cent. in these cases indicates the futility of the treatment employed. The fatality of traumatic tetanus quoted in text-books gives 70 to 80 per cent. of deaths, therefore there is reason to believe that in the tetanus following wounds produced by blank cartridges there are fewer cases that recover. The reasons suggested for this high mortality are the youth of the patients and the unusually favourable conditions offered the bacilli by the blank cartridge wounds, so that the organisms multiply rapidly. Antitoxin was used in a considerable proportion of the fatal wounds, so that it would appear that this remedy is very limited in use in spite of its great experimental efficiency in animals and its considerable prophylactic value. Undoubtedly the earlier in the case that the antitoxin is used the better, but as a rule it is not given until the convulsions are well developed, at which time the disease has been in progress from five to 12 days. The following method of treatment, however, in the hands of those who have tried it has yielded more promising results. As soon as possible after the patient is seen general anæsthesia should be produced and the wound cleaned most carefully in order to prevent further formation and absorption of the toxin. Free drainage and access of air should be secured by loose but complete gauze packing. Before consciousness returns, or even before the operation is commenced, antitoxin should be administered. By far the best results which have been reported were obtained by those who have injected the remedy into the spinal canal. The plan adopted is to introduce the needle of the syringe into the subarachnoid space by passing it between the third and fourth lumbar vertebræ. The syringe should not be attached to the needle at this time, and between two and three drachms of the cerebro-spinal fluid should be allowed to escape. This fluid is known to be highly toxic in tetanus, much more so than is the blood serum. Then the syringe containing from 10 to 15 cubic centimetres of antitoxin should be attached to the needle and its contents slowly injected, allowing at least five minutes for the process. This should be followed by the injection with a fine needle of as much as possible of the antitoxin into the substance of, and along the course of, a large nerve trunk, preferably the one supplying the injured part. This method is based on observations concerning the paths by which the antitoxin reaches the spinal cord. After the operation and injections a subcutaneous saline infusion is desirable. The patient should then be placed in a quiet, darkened room and every possible means taken to avoid any disturbance which may excite the paroxysms. The administration of morphine, chloral, or bromides will be found advantageous. From the results already reported this mode of treating tetanus by antitoxin deserves a further trial, and doubtless the experience so obtained will be duly recorded.

THE DANGERS OF THE INDIAN RELIGIOUS FESTIVALS.

THE annual subsidence in the epidemic of plague has now begun to take place, the returns of plague mortality throughout India, though very serious, being for the time comparatively insignificant. But the yearly religious festivals, which cause an anxious time for the officials intrusted with the sanitary arrangements for these large concourses of people, have now commenced. Our Special Correspondent writes from Calcutta under the date July 16th as follows: "The extension of the railways in India has added to the difficulties. At Puri, for example, the numbers of the people attending the great car festival are increasing every year. In former times the pilgrims tramped by road but now they are conveyed by train in thousands packed like sheep in trucks. The water-supply is often deficient and polluted. Last year over 6000 deaths occurred from cholera and the outbreak in the town spread to the whole district around. The people are so ignorant and so fanatical that they prefer dying during the pilgrimage to availing themselves of medical assistance. Perhaps in the old days as many died on the road to or from Puri as now die in the city itself, but the danger which presents itself to-day consists in the widespread dissemination of the disease. The religious parties themselves have no concern for the health of the pilgrims and all the sanitary arrangements have to be made by the Government."

FRAUDULENT CLAIMS AGAINST THE EXECUTORS OF MEDICAL MEN.

A MAN named William Herbert Hilton was sentenced to nine months' hard labour at the recent quarter sessions held at Dorchester for an ingenious attempt to obtain money by false pretences from the executors of the late Dr. Sidney J. Allden of Bridport. Dr. Allden practised at Bridport in partnership with Mr. W. A. E. Hay until Dec. 31st, 1903, when the partnership was dissolved, and then alone until Feb. 28th, 1904, when he died. The usual notices of his death appeared in the medical papers, after which an account for goods to the value of £5 9s. was received addressed to him, which purported to be overdue. This would mean that the debt had been contracted by him privately during the existence of his partnership, and the fact that Dr. Allden had always been scrupulously careful in paying accounts as they fell due caused his executor, who happened to be a solicitor, to make careful examination of all his papers and receipts. A letter to Mr. Hilton, the pretended instrument-maker, who had as a telegraphic address upon his paper the suggestive, if curiously spelt, word "Chururgecos," produced an answer expressing regret at the news of Dr. Allden's death and referring to him as a fellow-student of the writer at St. Thomas's Hospital. This, no doubt, was due to the mention of St. Thomas's Hospital in the Medical Directory as a place where the deceased had received part of his medical education. As a matter of fact, however, he had only been there for six months when

he was already fully qualified and therefore not a student. Inquiry showed that the prisoner had never been at St. Thomas's Hospital at all, that he had no place of business, that the addresses which he used were merely places where letters were addressed to him, and that he had not registered any telegraphic address. Upon these false pretences he was arrested and convicted, the matter being clinched by the fact that, although he defended himself with considerable pertinacity up to the last moment, he declined to enter the witness-box and give an account of himself. He would probably have cut a poor figure under the cross-examination which counsel for the prosecution was no doubt ready to administer to him. Juries are now fully aware of the right of prisoners to tell their stories under oath, and ingenious rascals who decline to face the ordeal are not likely to be believed. The story shows that the executors of professional men should be careful not to pay apparently genuine accounts without careful examination and also exemplifies the importance of keeping receipts for moneys paid, and also accounts of sums due. A noticeable feature in the trial of Hilton was the evidence of Mr. R. S. Hopkins, medical school attendant at St. Thomas's Hospital, who was able to swear positively not only that he had been unable to find the prisoner's name in the registers but that from his personal knowledge the prisoner had not been a student at the hospital within the period of Dr. Allden's attendance there or at all. No effort of the prisoner could shake him in this, and no doubt his claim to recognise the faces of all students who had attended during his service at the medical school was fully justified. The faculty of accurately remembering faces is natural to some persons and is one which can be strengthened by habitual effort. It is an extremely useful, if not essential, qualification of porters in hospitals, clubs, and other places to which admission is permitted only to members of the institution. Persons endowed with it can usually be depended upon not to make mistakes and their evidence is of an entirely different nature from that of those who readily, and often inaccurately, profess to know persons who, they allege, have upon some one occasion robbed or injured them. The case of the unfortunate man Beck, recently "pardoned" after having endured a term of penal servitude and a further arrest since for robbing women of their jewellery, will long be remembered as an instance of the ease with which mistakes may be made by casual and unpractised observers.

METRORRHAGIA IN TYPHOID FEVER.

THOUGH various hæmorrhages are common in typhoid fever uterine hæmorrhage has received little attention. Menorrhagia at the onset of the attack has been observed. In the *Journal of the American Medical Association* of July 2nd Dr. W. E. Darnall has recorded the following case, which is remarkable in that the hæmorrhage took place during the third week of the attack and did not occur at the time of a menstrual period. A woman, aged 30 years, became ill on May 21st with headache and muscular pains but she did not take to bed until June 9th. On the 12th the temperature was 103° F. and severe diarrhœa began. About 8 P.M. the temperature was 105° and metrorrhagia began. (Menstruation had occurred two weeks previously and had always been regular.) There were constant nausea and abdominal pain and the stools were of a "pea-soup" character. On the 13th there was no action of the bowels but the flow was more free and micturition was difficult. The Widal reaction was obtained. An examination did not reveal any disease of the pelvic organs. Ergot was given. The vagina was packed with gauze for 24 hours, which checked the hæmorrhage. On the 14th the temperature ranged between 101° and 103° and the pulse between 80 and 130. A few typical rose spots were seen. On the 15th the temperature ranged between 101° and 103° and the pulse between 114 and 143. The patient's condition was critical and the dejections took place involuntarily. The pulse was very weak and at times imperceptible. The stomach rejected everything. On the 16th death occurred. At the necropsy some Peyer's patches were found much inflamed and in two perforation had almost taken place. The uterus and appendages appeared to be normal and no cause for the hæmorrhage could be found. In its early stages the case was an example of ambulatory typhoid fever.

SECRETIN.

IT has been shown that the introduction of acid into the duodenum was productive of secretin even after destruction of all nerve connexions of the pancreas and alimentary canal with the central nervous system and even after extirpation of the sympathetic ganglia of the solar plexus. With a view to determine the mechanisms of this reflex secretion of the pancreas, as well as of the adaptation of the pancreatic secretion to variations in the food of the animal, Mr. W. M. Bayliss, F.R.S., and Dr. E. H. Starling, F.R.S., commenced an interesting research the results of which were communicated to the Royal Society in the Croonian Lecture this year. From a consideration of previous work on the subject these writers surmised that as the introduction of acid into the blood stream had no influence on the pancreas the acid introduced into the intestine must be changed in its passage to the blood-vessels through the epithelial cells or must produce in these cells some substance which on access to the blood stream evoked in the pancreas a secretion. This was found to be the case. On rubbing up the mucous membrane with acid and injecting the mixture into the blood stream a copious secretion of pancreatic juice was produced. It was then found that the active substance, which the writers call "secretin," was produced by the action of acid from a precursor in the mucous membrane, probably in the epithelial cells themselves. Once formed by the action of acid it could be boiled, neutralised, or made alkaline without undergoing destruction. The precursor of the substance (pro-secretin) cannot be extracted by any means that were tried from the mucous membrane. Even after coagulation of the mucous membrane by heat or alcohol secretin can still be extracted from the coagulated mass by the action of warm dilute acid. The writers are inclined to believe that the chemical mechanism described is the only method by which the pancreas is induced to secrete. Secretin can be split off from its precursor in the mucous membrane by the action of acids or boiling water. It is therefore concluded that the process is one of hydrolysis. Secretin is neither a coagulable proteid nor a ferment. It is soluble in 90 per cent. alcohol in the presence of ether but it is insoluble in absolute alcohol and ether. It is slightly diffusible through animal membranes. It can be filtered through a gelatinised Chamberland filter. It is not precipitated by tannic acid, thus excluding bodies of alkaloid nature as well as di-amido compounds. This evidence, slight though it is, points to secretin being a body of relatively small molecular weight and not a colloid. It may be compared to the active principle of the suprarenal glands, adrenalin, which has been obtained in a crystalline form and the chemical constitution of which has been approximately determined. This is, indeed, what would be expected of a substance which has to be turned out into the blood at repeated intervals in order to produce in some distant organ or organs a physiological response proportional to the dose. The discovery of secretin has placed in the hands of physiologists the power of controlling the activity of a gland by purely physiological

means and Mr. Bayliss and Dr. Starling have taken opportunity of the control thus acquired to investigate the exact character of the changes induced in the pancreas under this physiological stimulus. Apparently, secretin has no specific influence on any one constituent of the pancreatic juice. When injected it causes secretion of a juice which is normal in that it resembles the juice secreted on entry of food into the duodenum, and contains a precursor of trypsin, amylopsin, and steapsin. Secretin, in fact, appears to cause the pancreatic cells to turn out the whole of the mesostates which they have accumulated during rest in preparation for the act of secretion. If secretin be injected at repeated intervals until the gland will no longer respond to the injection it is found on microscopic examination that the cells have discharged the whole of their granules. Under healthy conditions it is probable that the activity of the pancreas is two-fold in character and that the normal stimulus of secretin excites not only a breaking down of the protoplasm and a discharge of granules but also a building up of the protoplasm and a new formation of granules. So marked, in fact, is this power of self-restitution that it is often advisable to diminish the resistance of the animal by bleeding or other means if it is desired to obtain a specimen of exhausted gland. So far the writers have dealt only with the correlation of the activities of the cells lining the intestinal tube with those forming the masses of the pancreas and liver, from which it will be seen that a very large part of this correlation is played by a chemical substance which acts, so to speak, as a chemical messenger between these various organs. A striking feature, however, of the pancreas is its alleged power of adapting its secretion to the nature of the food taken in by the animal. A study of the mechanism by which the pancreas can adapt itself to the nature of the food has been carried out and completed by Dr. F. A. Bainbridge in an interesting series of physiological experiments. It was found that as the result of injecting lactose some substance which may be called *x* is produced in the mucous membrane of the small intestine. This substance is carried by the blood to the pancreas and there slowly gives rise to the formation of lactase which is turned out in the juice when secretion is excited by the entry of acid chyme into the duodenum. As yet the nature of this substance *x* is not known. All that can be said is that it is destroyed at a boiling temperature, since boiled extracts of the mucous membrane of milk-fed dogs do not, when subcutaneously injected, cause the appearance of any lactase in the pancreatic juice of biscuit-fed dogs.

ALCOHOLISM IN SCHOOL CHILDREN.

OUR Berlin correspondent writes: "Dr. Goldfeld, medical officer to the public schools at Schöneberg, a suburb of Berlin, has recently carried out an investigation on the spread of alcoholism in school children. The investigation included a boys' school of 470 and a girls' school of 497 children (a total of 967 children), the result being that not less than 496, or 51·3 per cent., of the children were accustomed to indulge daily in the drinking of beer, whilst 299, or 30·9 per cent., casually took spirits also. The quantity of beer consumed was from one to two glasses of a quarter of a litre a day. Malt beer was preferred by the majority, whilst some drank lager beer, or the so-called white beer, a special Berlin beverage containing a great quantity of carbonic acid and a relatively small quantity of alcohol. As to the other liquors Dr. Goldfeld states that rum, kümmel, cognac, or even a combination of several spirits was taken. As a rule the father on going to a public-house invited his children to go with him, where he allowed them to have a drink. Children of publicans were especially liable to indulge in spirits. It was not only the boys but also the girls who liked to drink beer, but they preferred the sweeter liquors to the sharper ones. The teachers informed Dr. Goldfeld that children accustomed to the use of spirits were especially lazy, absent-minded, and inclined to tell lies. Dr. Goldfeld undertook to warn the children against the danger of alcoholism but without any success, the children continuing to drink. Although his endeavour was supported by the teachers the parents were not to be persuaded and the influence exerted by the school was checked by that of the parents. Dr. Goldfeld proposes that eventually addresses should be read on the subject before a meeting of parents of children attending individual schools and that, moreover, they should be provided on behalf of the school authorities with a short essay dealing with the dangers of alcoholism." The tables given in Dr. Goldfeld's paper show that of 470 boys 264, or 56·2 per cent., daily drank beer and 139, or 30 per cent., were casual drinkers. In one of the classes 96·2 per cent. were regular drinkers and in another only 33⅓ per cent. Spirits were taken by from 17·7 to 60·4 per cent. The figures relating to girls, though sufficiently serious, showed a less prevalent consumption of alcohol.

THE OPERATIVE TREATMENT OF RETROFLEXION OF THE UTERUS WITH ADHESIONS.

THE treatment of cases of retroflexion of the uterus with prolapse of the ovaries and adhesions preventing the reposition of the displaced organs is often a source of great trouble to the practitioner. The distress caused to the patient by such a condition is frequently extreme and yet ordinary methods of treatment may quite fail to give any relief. That most cases of retroflexion giving rise to symptoms where the uterus is moveable and can be replaced should be treated by the introduction of a pessary there can be no question. It cannot be justifiable in such cases to practise any operation if relief can be obtained by a pessary, unless indeed the patient refuses to wear such a support. In cases, however, where a pessary gives no relief and where the patient, as not infrequently happens, is made a chronic invalid by the conditions, the question of operative treatment must be considered, and it is precisely in this class of case that so much difference of opinion exists as to what operation should be performed. Shall the patient be treated by Alexander-Adam's operation, shall the round ligaments be shortened intraperitoneally, or shall the fundus uteri be fixed to the abdominal wall by one or other of the methods of ventrofixation? If adhesions are present then the view taken by most operators is that they can be dealt with most safely and most certainly after opening the abdomen. In such circumstances, then, either ventrofixation or intraperitoneal shortening of the round ligaments must be carried out. Which of these two operations is most likely to be followed by permanent results and lead to no subsequent disability? The question is one that does not admit of a ready answer. That ventrofixation has in some instances given rise to trouble in subsequent confinements there can be no question. But if the lower part of the uterus alone be fixed to the abdominal wall such fixation would not appear at all likely to cause subsequent trouble. On the other hand, the intraperitoneal method of shortening the round ligaments is quite safe from the point of view of any trouble being caused in a future pregnancy, but the permanency of the result is on the whole less certain. Our own feeling in the matter is that while intraperitoneal shortening of the round ligaments is not at all likely to be attended by any subsequent trouble, yet the permanent result of ventrofixation is much more certain. The method of practising it in which the lower uterine segment alone is fastened to the abdominal wall reduces the risk of any trouble at a subsequent pregnancy to so small a factor that this should

be the operation of election in all cases of retroflexion of the uterus with adhesions where operative treatment becomes necessary. The problem is a much easier one in the case of patients who are not likely to have any more children either because they are past the menopause or from some other reason. Here the advantages of ventrofixation are not in any way counterbalanced by the risk of trouble in connexion with subsequent pregnancy or labour. For such patients the operation is especially indicated. Its dangers in these days of antiseptic surgery are so small that it may be recommended with confidence both as regards its risk and, if a good method be adopted, as regards the permanency of the cure of the displacement and the relief of the symptoms.

OVERCROWDING IN TRAINS.

WE have more than once referred in the columns of THE LANCET to the overcrowding of railway trains[1] and have pointed out that what is wanted is a combination among the passengers. Efforts are now being made to form this combination. We print in another column a short notice of an important meeting held in London on July 28th to protest against the attitude of certain railway companies towards their passengers and we hope that the movement thus inaugurated will not be allowed to drop. In order to show the urgency of this question of overcrowding on railways it may be interesting to recall to our readers' memory a few points made in a paper read at the Royal Statistical Society on March 15th, 1904, by Mr. E. J. Harper, statistical officer to the London County Council. Mr. Harper showed that during 1902 the local and other railways serving Greater London carried the enormous total of 600,000,000 passengers, the railways covered a little under 600 miles, and the London area was served by 531 stations. The lines which carried the greatest number of people per annum were the Metropolitan, which carried over 95,000,000, the District, nearly 49,000,000, the North London, over 50,000,000, the "Twopenny Tube," over 45,000,000, and the City and South London, nearly 20,000,000. From 3 to 10.30 in the morning the number of passengers brought into London from the suburbs was 410,471 and the greatest percentage of overcrowding on a single train was 72·1 per cent. This train carried a fraction over 17 persons in each ten-seated compartment. How it affects workmen may be inferred from a Parliamentary Blue-book issued in February of this year by which it appeared that the number of workmen's tickets issued on all railways within the metropolitan area in 1902 was nearly 62,000,000. There seems to be a general opinion abroad that when the lines of some of the chief offending railways are "electrified" overcrowding will disappear, but it must not be forgotten that although the managers of those railways will be granting increased facilities they have stated that they expect a large access of traffic, and how far that increase of traffic will counterbalance or outweigh the new facilities remains to be seen. It is possible that the general public may be too optimistic as to the good results which will arise from "electrification." At all events, the remarks of Lord Claud Hamilton, the chairman of the Great Eastern Railway Company, at the half-yearly meeting of the company held in January, 1904, give food for thought. He compared that railway with two specimens of the electric system—viz., the Central London and the Manhattan Railway of New York—and claimed that his railway was able to provide in the busiest period about twice as many seats as either of these two electric railways. The great difficulty of some of the railway companies appears to be that not all the platforms are long enough to allow of increasing the number of coaches per train. Some of the railway managers complain that the great cause of overcrowding is that the majority of people travel by the latest train that will convey them to their business in time and therefore rush up at the last moment. Sometimes, however, the railway companies "cut out" a certain train in the busy time when the passengers who usually travel by it have to travel by, and grossly overcrowd, the next train. Again, sometimes a train is delayed at a busy station and the barriers are not shut, with the consequence that passengers crowd into the already full carriages. These, however, are episodes on which no stress need be laid; what must be remedied is the regular and serious overcrowding of most of the trains running in and out of London at the busy times of the day.

[1] THE LANCET, April 11th, 1903, p. 1049, and Feb. 13th, 1904, p. 480.

THE DEVELOPMENT OF NERVE FIBRES.

SOME recent statements made by Dohrn and Bethe to the effect that ganglionic nerve cells play no part in the formation of nerve fibres have met with vigorous opposition from the veteran histologist Kölliker who in an article contributed to the *Anatomischer Anzeiger* strongly supports the doctrine long ago enunciated by himself and greatly strengthened by the observations of Ramon y Cajal. Whilst Dohrn and Bethe contend that nerve fibres develop independently of the cells from the fusion of ectodermic cells which subsequently constitute the so-called Schwann's cells, Professor Kölliker is perfectly convinced that all nerve fibres of vertebrata are primarily processes of the protoplasm of either peripheral or central nerve cells, in every case the nerve cells sending forth one process, and one only, whilst every nerve fibre terminates in a free extremity. He points out that the nerves of the spinal cord and medulla oblongata originate in the nerve cells and that subsequently the protoplasm of the process becomes differentiated into axis cylinder and medullary sheath. The axis cylinder afterwards becomes surrounded by small cells and terminates in the mode described by Cajal in ramifications which embrace other cells. The peripheral motor and sensory fibres become surrounded by special cells which form an investment to the ganglion cells and form also the sheaths of Schwann. All these cells proceed from the mesoderm and increase in number by mitosis.

RADIUM ENERGISED WOOL: RUSSIAN EXPERIMENTS.

IN a review by Mr. Elpe in the *Novoe Vremya* on the progress of recent inquiries into the properties of radium it is stated that Dr. E. S. London of Russia has been studying the question of radium emanations and his investigations lead to the conclusion that generally radium emanations do not differ in their physiologo-pathological action from the action of radium itself. Both inflame the skin and are destructive to various kinds of life. Dr. London carried out a series of tests with widely differing subjects, such as paraffin, cork, paper, and cotton-wool, which were subjected for some time to radium emanations and produced inflammatory effects on the skin, the most intense radio-activity being observed in the case of the wool which because of its sponginess absorbs a large quantity of radium emanations. This inclines Dr. London, in respect of treating skin diseases with radium, to pay particular attention to this faculty of wool. "Emanated" wool, according to him, offers, in the first place, the facility of easy distribution over the body and it can be conveniently adjusted to any part according to the needs of the case. In the second place, in the vehicle of wool radium becomes conveniently portable and radio-active energy, as in charged wool, can be sent great distances, since in hermetically

closed vessels its radio-activity weakens very slowly. At the same time radio-active wool may become part of pharmaceutical stock and at no great expense, for from five to ten milligrammes of radium are sufficient to energise a large quantity of wool. However, as to this Dr. London is careful to state that before making "emanated" wool an article of pharmaceutical commerce we must know how and in what particular cases the commodity would be useful—and that is still a question for the future.

TREATMENT OF PERTUSSIS BY VACCINATION WITH CALF LYMPH.

WE have received from a correspondent the records of five cases of pertussis in which recovery ensued when the patients were vaccinated with calf lymph in the usual way as a protection against small-pox. The diagnosis in each case was undoubted and no other treatment was employed. The symptoms of pertussis abated when the vesicles matured and the cough had entirely gone in about 11 days. The suggestion that one pathogenic organism might destroy another has been occasionally raised, but so far as we are aware no definite proof of this antagonism has been brought forward. "Mixed infections" are not uncommon and in some cases the action of a pathogenic organism has been rendered more intense by the injection of a non-pathogenic microbe but we are not acquainted with any trustworthy investigations which tend to show that one germ can act as an antidote to another. Our correspondent is naturally much impressed with the result of vaccination in his cases but admits that the question still remains as to whether vaccinia virus is a specific in such cases or whether any form of absorption from a local infective centre would have a similar result. We agree with him that it would be interesting to ascertain whether other practitioners have had a similar experience.

DAKHYL v. LABOUCHERE.

IN this case a new trial has been ordered by the Court of Appeal and it is therefore again *sub judice*. In the circumstances it will be sufficient to explain briefly the reasons why it has to be re-heard and to await with interest the verdict of a second jury. The plaintiff, it will be remembered, was a person possessing foreign qualifications only and practising medicine in London, either chiefly or entirely in connexion with cases of deafness. He had been, but had ceased to be, medical adviser at the Drouet Institute when there appeared in Mr. Labouchere's paper an article criticising him adversely, the sting of the alleged libel lying in the term applied to him, "a quack of the rankest species," it being further stated that he had "left the Drouet gang in order to carry on a 'practice' of the same class on his own account." The principal misdirection of the jury by Lord Alverstone upon which the Court of Appeal based its order for a new trial consisted in directions which amounted to a finding by his lordship that the words used were libellous, instead of the question whether they were so or not being left to the jury. The question of "libel or no libel" is essentially one for the jury, the judge being limited to a decision if necessary as to whether the words complained of are *capable* of being a libel. The summing up of Lord Alverstone, however, was such that the jury might have inferred that to call a person possessing medical qualifications a "quack" was necessarily a libel upon him, whereas the Master of the Rolls pointed out, what indeed is obvious, that a man may be fully qualified to practise medicine and yet may be fitly called a "quack" should he resort to "quack" methods. The definition of a "quack," apparently accepted in this case as "a boastful pretender to medical skill which he does not possess," obviously permits the term to be applied with justice to a person qualified by education and registration to practise medicine, if only because such an one may claim the power to remedy conditions which are irremediable It was also held by the Court of Appeal that the learned Lord Chief Justice had not properly left to the jury the question whether the words used were or were not "fair comment upon a matter of public interest," because in summing up he had sought to distinguish between comment on the plaintiff and comment upon the Drouet Institute. The question whether the matter was of "public interest" was for the judge to decide but the question whether the criticism was "fair comment" was for the jury. Referring to the criticism of the plaintiff in his connexion with the Drouet Institute the Master of the Rolls said that if the writer "commented upon the methods of the person who worked the institution and said that the person was working a quack institution and was therefore himself a quack it would be for the jury to say whether the comment was fair comment or not." The Court of Appeal therefore ordered a new trial, the costs of which will include those of the first one and of the appeal, but, of course, this was done without any intimation or suggestion as to what, in the opinion of the Court, the result of such new trial should be.

IN the House of Commons on August 3rd Mr. T. Chamberlayne asked the Home Secretary whether he would consider the advisability of imposing some restrictions on the advertising of patent medicines with a view to protecting persons of the poorer classes. Mr. Akers-Douglas replied that the question of legislation for the purpose of dealing with certain evils in this connexion had been considered in his department, but he spoke as though he were much oppressed with the difficulty of doing anything.

Dr. Frederick John Hicks, who was charged at the Central Criminal Court with performing an illegal operation upon a young married woman, was found not guilty.

THE King has appointed Sir William MacGregor, K.C.M.G., C.B. (Governor of Lagos), to be Governor and Commander-in-Chief of the Island of Newfoundland and its Dependencies.

THE REPORT OF THE PRIVY COUNCIL UPON PHYSICAL DETERIORATION.

IN September last a Committee of the Privy Council was appointed by the Duke of Devonshire, at that time Lord President of the Council, to investigate the subject of physical deterioration as affecting the British population. The committee consisted of the following members: Mr. Almeric FitzRoy, C.V.O., clerk to the Privy Council; Colonel G. M. Fox, C.B., formerly head of the Army Gymnastic School; Mr. J. G. Legge, chief inspector of reformatory and industrial schools; Mr. H. M. Lindsell, C.B., assistant secretary to the Board of Education; Colonel G. T. Onslow, C.B., inspector of marine recruiting; and Dr. John Tatham of the General Register Office, Somerset House. The terms of the first reference were as follows: "To make a preliminary inquiry into the allegations concerning the deterioration of certain classes of the population as shown by the large percentage of rejections for physical causes of recruits for the army and by other evidence, especially the report of the Commission on Physical Instruction in Scotland; and to consider in what manner the medical profession can best be consulted on the subject with a view to the appointment of a Royal Commission and the terms of reference to such a commission

if appointed." Shortly afterwards this reference being found unsatisfactory was enlarged and the committee was further instructed: "(1) To determine with the aid of such counsel as the medical profession are able to give the steps that should be taken to furnish the Government and the nation at large with periodical data for an accurate comparative estimate of the health and physique of the people; (2) to indicate generally the causes of such physical deterioration as does exist in certain classes; and (3) to point out the means by which it can most effectually be diminished."

The committee has been commendably assiduous in the conduct of its inquiry, for within a period of less than 11 months from the date of its appointment it has examined 68 witnesses carefully selected from each division of the kingdom, and after the fullest deliberation, involving a lengthy correspondence, it has unanimously agreed to its report which has been duly presented to Parliament. There are many competent persons who entertain the opinion that a matter of supreme public importance like the present, involving a critical examination of the state of the national health, should have been referred not merely to a departmental committee but to a Royal Commission fully equipped with power to require the attendance of witnesses, the production of documents, and so on, and with such other prerogatives as are conferred on commissions of that type. But after careful study of the report before us, which has been prepared by a committee of seven members of the Civil Service, we think that the public will approve of the committee's conclusions, although the body arriving at them may be destitute of the authority, independence, and prestige which the King's mandate implies. Whether or not the recommendations are carried into effect by the Government or by the several minor authorities concerned. We have no hesitation in saying that the committee has done most useful work.

For the convenience of our readers we may here briefly recapitulate the circumstances which led to the present investigation. In the *Contemporary Review* for January, 1903, Major-General Sir Frederick Maurice published an article which, without disputing its interest and suggestiveness, may be called sensational, entitled "The National Health: a Soldier's Study." This article, which constituted a serious impeachment of the health of the British nation, was based on the personal observations of Sir Frederick Maurice himself and of the then Inspector-General of Recruiting with respect to the physical character of the youths who present themselves as recruits for the British army. The fact relied on to justify this impeachment was that, according to recent experience, out of every five men offering themselves for enlistment only two are to be found in the army as effective soldiers by the end of two years' service. Shortly after the appearance of this article the Director-General of the Army Medical Department addressed a memorandum to the Secretary of State for War, drawing attention to the writings of Sir Frederick Maurice and sharing with that officer responsibility for the statement that a very large proportion of the men who offer themselves for enlistment into the army are found to be physically unfit for military service. The intricacies of War Office administration have always been a sealed book to outsiders, nor is it generally known to what extent the official chiefs of the various departments are expected to atone for the shortcomings of other branches of the service. But without prying into official secrets we have it on high authority that the method adopted by the Director-General of the Army Medical Department is strictly in accordance with official precedent. In a letter published in THE LANCET of Feb. 7th, 1903, p. 397, Surgeon-Colonel F. H. Welch, A.M.S., tells us that several years ago Sir Thomas Crawford, late Director-General of the Army Medical Department, finding that the material then available for recruiting had fallen lamentably short of the ideal, published a paper based on army statistics in which he deduced conclusions practically identical with those for which we are indebted to Sir Frederick Maurice and the present Director-General of the Army Medical Department. In a leading article in THE LANCET of Jan. 31st, 1903, p. 315, we ventured to challenge the validity of Sir Frederick Maurice's conclusions. We endeavoured to show that the health statistics of the class of men desiring to enlist in the army are by no means those of the general people but are rather the health statistics of that part of the population which the late Inspector-General of Recruiting has described as "very largely rubbish."[1] If this be so it is unjust and absurd to disparage the health of the entire British nation on the strength of data relating exclusively to a comparatively small part of it.

On the issue as a Parliamentary paper of Sir William Taylor's memorandum to the Secretary of State for War the controversy on the alleged physical deterioration of the masses reached the acute stage. Ever since the publication of that document in April, 1903, the daily press has been flooded with vague statements affirming deterioration in physique of the labouring classes, while the usual crop of silly and impracticable suggestions has followed for the abatement of an evil the existence of which has been accepted without question. Early in July of last year the Earl of Meath drew attention to the subject in the House of Lords, basing his remarks on a statement in a report of the Inspector-General of Recruiting for 1902, which once more affirmed the existence of deterioration among the classes furnishing army recruits. His lordship was followed by the Bishop of Ripon who, whilst personally sceptical as to the extent of the mischief alleged to exist, advocated full inquiry into the matter. Upon this the Lord President of the Privy Council undertook to take the opinion of the Royal Colleges of Physicians of London and Surgeons of England on the entire subject and this we now know to have been in favour of further inquiry. On Sept. 2nd the Duke of Devonshire announced the appointment of the committee which has recently made its report.

For convenience of comment upon the different matters of reference the committee has distributed the subject matter of its report under three headings. The first deals with the War Office memoranda; the second discusses the causes of such degeneracy as is known to exist, together with the appropriate means for its amendment; and the third contains a summary of the principal recommendations of the committee. Under these headings severally, and in the same order, we propose to summarise the chief points in the committee's report. In pursuance of the scheme of procedure dictated by the terms of its reference the earliest evidence invited by the committee was that of Sir William Taylor, Director-General of the Army Medical Service, and that of the late Inspector-General of Recruiting, General Borrett; Major-General Sir Frederick Maurice also gave evidence on the same day. The reports and memoranda issued by the War Office on the responsibility of the first two officers above mentioned were naturally the first to engage the committee's attention. These documents having been formally submitted to the judgment of the two Royal Colleges the committee very properly prefaces its report with a statement of the verdict thereupon agreed to by both authorities, which was substantially to the following effect: (1) that the evidence adduced in the Director-General's memorandum is inadequate to prove that physical deterioration has affected the classes referred to; (2) that no sufficient material (statistical or other) is at present available to warrant any definite conclusions on the question of the physique of the people by comparison with data obtained in past times; and (3) that a partial investigation, as, for instance, into the conditions of the classes from which recruits are at present mostly drawn, might be misleading and might give rise to erroneous conclusions on the general question. The Royal College of Physicians of London, however, differed from the sister College in Lincoln's Inn-fields by advocating an inquiry into the present physical condition of the people—an expedient which the latter authority did not think necessary. With regard to the War Office memorandum, the committee remarks that an independent examination of the Director-General's papers, undertaken by the authorities of the Metropolitan Police, has led to the conclusion that the calling of a soldier has ceased to attract the class of men who formerly enlisted, and as a consequence a large proportion of the "residuum" of the population come under the notice of the army recruiting authorities. This conclusion appears to be borne out by the complaints of commanding officers as to the physique of many of those enlisted and tends to explain the drain from desertion among those who find themselves disappointed in the hopes of an easy existence. Again, Professor Cunningham of Edinburgh criticises the value of the War Office figures thus: "Perhaps the most unreliable evidence," he says, "is that which is obtained from the

[1] Report of Committee on Physical Deterioration, par. 25.

recruiting statistics because the class from which the recruits are derived varies from time to time with the conditions of the labour market. When trade is good and employment plentiful it is only from the lowest stratum of the people that the army receives its supply of men; when, on the other hand, trade is bad a better class of recruit is available. Consequently the records of the recruiting department of the army do not deal with a homogeneous sample of the people taken from one distinct class." In one respect especially the data supplied by the War Office are unsatisfactory. On p. 2 of the Director-General's memorandum it is stated that three-fifths of the recruits examined come under Class I. of the Army official tables, which class consists of "labourers, servants, husbandmen, &c." On reference to the census returns we find that this description does not tally with any classification hitherto adopted for enumeration purposes; therefore, as the health and physical condition of street loafers, costermongers, and dock labourers differ widely from those of agricultural labourers, all of which workers are nevertheless included in this category, it follows that no useful analysis can be made of that very class of the population from which our army recruits are for the most part derived.

In the course of their evidence both the Director-General and the late Inspector-General of Recruiting were fain to admit, on being pressed, that the real lesson of the recruiting figures was the failure of the army, under present conditions, to attract a good type of recruit. Indeed, General Borrett gives up the case for widespread deterioration when he says: "It is a pity that the physique of the recruit-giving class is as poor as it is, so as to cause such a large percentage of rejections for the army." And again, when in answer to a question whether "the men who want to be soldiers" were not those people who have no opening in life or have no occupation, and who drift to the recruiter in the vague hope of being passed, he replies, "There are a great many of that kind, no doubt; I must confess that a great many are that way." Moreover, Sir William Taylor could not deny that, even if the number rejected by the recruiters was as large as some people suppose, it might merely imply that a great many not fit or disinclined for permanent work present themselves to the recruiting sergeant on the chance of being passed, and that the condition of those rejected is only representative of the state of the wastrels of the large towns who live by casual labour. As another and very excellent witness, Dr. A. Eichholz, observed: "It is the years after leaving school that determine so many lives; by the time the boy has reached 17 he has shown either self-improvement or self-deterioration, in which last case you may get him for a soldier. At 17," he goes on to say, "you are landed with the failures and the lack of self-improvement which they have exhibited is largely bound up with their physical condition. At 17 they become street loafers, practically the only available source of recruiting for the army." The committee quotes the following vivid description of these persons from Mr. Charles Booth: "These men hang about for the 'odd hour,' or work one day in the seven; they live on stimulants and tobacco, varied with bread and tea and salt fish. Their passion is gambling. Sections of them are hereditary casuals; a large portion of them drift from other trades; they have a constitutional hatred to regularity and forethought and a need for paltry excitement. They are late risers, sharp-witted talkers, and, above all, they have that agreeable tolerance for their own and each other's vices which seems characteristic of a purely leisure class, whether it lies at the top or bottom of society." The evidence of Sir Frederick Maurice did not modify the impression produced by that of either the Director-General or the late Inspector-General of Recruiting, nor could the committee accept the basis of the somewhat alarmist statement for which he is responsible—namely, that of those who wish to be soldiers only two out of five are to be found in the ranks at the end of two years. Sir Frederick Maurice obtains this result by taking the 34·6 per cent. of rejections by medical examiners and the 2·1 per cent. of those discharged before the completion of two years, and adding thereto a purely conjectural percentage as to the number of those previously rejected by the recruiters. It was stated by Sir William Taylor that no record whatever of these latter was preserved, but the committee thinks that if such a record could be maintained it might be useful to dispel false impressions as to the actual number. Looking, however, to the condition of the classes from which, as it has been seen, these people issue, the committee does not think that the proportion, even if it were as stated by Sir Frederick Maurice, is so very disquieting; indeed, a very competent medical witness, Dr. Eichholz, takes the view that having regard to the circumstances in which the British army is recruited the fact that 40 per cent. of those that present themselves to the recruiting officers become good soldiers is more to the credit of the physique of the people than the fact that under the German system of conscription only 16 per cent. of those liable to serve are rejected. From what has here been said we are by no means surprised to hear that, in the words of the report, the examination of the official representatives of the recruiting system has left upon the minds of the committee the conviction, confirmed as it has been by the evidence of other witnesses, that it would be as reasonable to argue from criminal statistics to the morals of the great mass of the people as it would be to argue to their physical condition from the feeble specimens which come under the notice of recruiting officers.

(To be continued.)

Looking Back.

FROM

THE LANCET, *SATURDAY*, AUGUST 5, 1826.

Electricity you are aware has been used in amaurosis, as well as in most other nervous affections. Mr. Hey, of Leeds, published some cases of amaurosis which he considered much benefited by the use of electricity; and the late Mr. Ware seems to have relied on it almost entirely. Indeed this influence in all the varieties of its application, and various other stimulants, have been tried over and over again in this affection; I have seen no benefit from it.

The tonic and stimulating plan of treatment has always been, and is still mentioned in the treatment of amaurosis. If I were to enumerate all the remedies of this class, which have been recommended and actually used, I should have to recount everything that comes under the head of tonic and stimulant, of nervous, antispasmodic, and antiparalytic. The greatest favourites, however, have been the arnica montana, pulsatilla, valerian, black hellebore, calamus aromaticus, camphor, opium, hyoscyamus, musk, castoreum, phosphorus, ammonia, flores zinci, steel, and naphtha; even fried millepedes have been strongly recommended.[1]

FOREIGN DEPARTMENT

MATERIA MEDICA.

M. Robinet on Mustard.—(Idem.)[2]

This distinguished chemist has discovered, that in pressing the mustard seed even in the cold, there can be obtained 20 per cent. of a fixed oil, having little smell and no vesicating power, while the residue deprived of this oil, becomes sharper and more blistering.

Hence the powder deprived of this oil would be much more active in cases where sinapisms are necessary.

[1] Excerpt from Lecture on the Anatomy, Physiology, and Diseases of the Eye, delivered by Mr. Lawrence in the London Ophthalmic Infirmary, Moorfields.

[2] "Journal de Physiologie, par F. Magendie, bearing date April 1826, but only just published."

RUSSIAN PRECAUTIONS AGAINST CHOLERA.—The Medical Department of the Caucasus has, says the *Novoe Vremya*, ordered the disinfection of all letters and parcels coming from Persia. The Discount and Loan Bank of Persia (which is a branch of the Russian Imperial Bank) has fitted out three sanitary bacteriological sections to combat the spread of cholera from Persia into Russia. Each section consists of a medical man, a lady doctor, assistants, and sanitary officers, and they are furnished with travelling bacteriological laboratories and a stock of disinfectants and drugs. The Institute of Experimental Medicine organised these bodies which have left St. Petersburg for their work, the bank named bearing all expenses.

THE BRITISH MEDICAL ASSOCIATION.

MEETING AT OXFORD.

THE meeting of the Association came to an end on Friday, when there was a general exodus from Oxford.

On Wednesday evening a conversazione was given by the Vice-Chancellor and the members of the University at the Museum. It was very largely attended and a number of interesting demonstrations were given. Prominent among these were the demonstrations by Mr. C. E. Walker and by Dr. W. Ford Robertson on researches connected with cancer. Dr. W. Ramsden also repeated his beautiful experiments upon bubbles and surface films which he showed at the Royal Society's conversazione on June 19th, 1903. The enjoyment of the evening was somewhat marred by torrents of rain which began to fall about 10.30 and there was a woeful scarcity of cabs. The weather also affected the astronomical demonstrations which had been arranged in the Observatory, for the only thing to be seen through the telescope was the spider-web cross-lines. However, the sight of these seemed to afford great pleasure to a number of people.

The annual dinner of the Association was held on July 28th in the hall of Christ Church. The company numbered about 300 and the Very Rev. the Dean of Christ Church (the Rev. T. B. Strong, D.D.) was in the chair. Amongst those present were the Vice-Chancellor of the University (Dr. D. B. Monro), the President of the British Medical Association (Dr. W. Collier), the Rector of Lincoln, the President of Magdalen, the Warden of Wadham, the Senior and Junior Proctors, Sir John Moore, Dr. T. D. Acland, and Sir W. Macewen. After the usual loyal toasts had been duly honoured the Warden of Wadham submitted "The Imperial Forces," which was acknowledged by Surgeon-General G. J. H. Evatt, C.B. The toast of "The British Medical Association" was entrusted to the Rector of Lincoln. He gained the sympathy of his audience by dwelling on the great progress that had taken place in the medical profession since the Association was started 72 years ago. Mr. Andrew Clark, chairman of the council of the Association, in his response to this toast, said the number of members had increased under the new constitution and laws. Sir John Moore then proposed "The University and City of Oxford," and this was acknowledged by the Vice-Chancellor and by the Mayor. Sir W. Macewen then submitted "The President and the Executive of the Oxford Division of the Association," and the President of the Association, in reply, stated how Sir John Burdon Sanderson had declined the honour of taking the office of President because of ill health. He concluded by proposing the toast of "The Guests," to which Professor Osler replied. The last toast of the evening was "The Governing Body of Christ Church," given by Dr. Acland and this having been suitably responded to by the Dean concluded the proceedings of the evening.

The thirty-fifth annual medical temperance breakfast given by the National Temperance League was held in the Town Hall, Oxford, on July 28th. Mr. W. McAdam Eccles presided over the gathering of 240 guests—the largest number that have ever been present. Among those who supported him were Sir Victor Horsley, Sir John Moore, Dr. J. J. Ridge, Dr. T. B. Hyslop, Dr. Robert Jones, Dr. W. Odell, Dr. Heywood Smith, Surgeon-General Evatt, C.B., Colonel T. H. Hendley, C.I.E., Dr. G. E. Shuttleworth, Dr. T. D. Savill, Professor Murdoch Cameron, Mr. R. Henslowe Wellington, and Mr. W. Soltau Eccles. The Chairman in a brief address remarked that the profession moved cautiously in the matter of alcohol but was earnestly alive to its important responsibility. The public, he said, still needs informing that alcohol is not an absolute necessity for the human frame and medical practitioners must undertake their part in this work of tuition. He strongly advocated some means of systematic instruction of medical students in the question of the use and abuse of alcohol. Dr. Collier said he was a strong supporter of moderation in the use of alcohol and wished to urge upon all members of the staffs of hospitals the utmost care in the prescription of alcohol, seeing that patients were so apt to take the exhibition of alcohol in the wards as an indication that they should continue to take it after discharge. In his own wards at the Radcliffe Infirmary extremely little was given. Dr. T. N. Kelynack delivered an address on the Present Position of the British Medical Profession in Relation to Alcohol, reviewing the rise of the scientific study of alcoholism and the practice of the profession in the past as to its prescription in disease. He then turned to the results of experiment and pointed out that the biologist had shown that the physical basis of life in both the animal and vegetable kingdoms may be detrimentally affected by alcohol. As regards the present-day practice of the profession, while it may rightly have been urged in the past that there was an unwarrantable laxness in the use of alcohol, every well-informed practitioner is now fully alive to his responsibility in the matter. He was sure that what was proved to be scientifically right cannot be ethically wrong. A vote of thanks to the league was proposed by Dr. Odell and responded to by Dr. G. Murray, the philologist of Oxford, who had for long been a Vice-President of the league. A vote of thanks to the chairman was proposed by Dr. Robert Jones of Claybury and Mr. Eccles briefly responded.

On Thursday evening, besides the annual dinner of the Association, a reception was given by Mrs. Collier and the ladies of the reception committee, at which the members of the Association were entertained at a party in New College Gardens. The weather was beautiful and the gardens were illuminated in the best possible taste with "fairy lamps" and Japanese lanterns. The moon was full or nearly so and the gardens, bounded as they are by the old city walls, looked their very best. The band of the Royal Marines played a selection of good music with their well-known skill, and in the hall Mr. A. M. Heathcote recited various dramatic sketches.

At an earlier hour the same evening Dr. G. Bagot Ferguson gave a popular lecture in the schools on Disease Germs. This is the first occasion upon which a popular lecture has been given under the auspices of the Association. Mr. Councillor Druce, chairman of the sanitary committee, was in the chair, and after a few introductory remarks he called upon Dr. Ferguson to give his lecture. Dr. Ferguson commenced by giving a short description of micro-organisms and pointed out that not all were harmful but that some were of great value. He referred to the enormous rapidity with which micro-organisms multiply and concluded by some very practical remarks upon hygiene and hygienic methods. The lecture was illustrated by lantern slides about 170 being shown.

On Friday garden parties were arranged at Worcester College Gardens and Blenheim Palace, the invitations to the latter being sent out privately by the Duke of Marlborough. Friday was a terribly wet day and the weather spoiled both functions. In the evening the Mayor and Mayoress of Oxford gave a reception at the Town Hall, when upwards

of a thousand guests were present. During the evening Dr. Arthur Haydon played the following violin solos: "Legende" (Wieniawski), "Berceuse" (Godard), and "Mazur" (Mlynarski). He gave an accurate rendering of them all, with good intonation, and was well received by the audience.

On the invitation of the mayor and corporation of Leamington Spa the members of the Association proceeded on July 30th to visit the Royal Pump Room and Baths at Leamington, where they were received by Alderman and Mrs. Flavel, the Mayor and Mayoress. The members of the reception committee, assisted by the members of the medical profession in Leamington, acted as guides to the visitors and much interest was taken in the parks and pleasure grounds and other objects of interest in the town. The Warnford Hospital was also thrown open for inspection. The visitors, numbering over 300, were provided with lunch, which was really a sumptuous banquet, at the Town Hall where the chair was taken by the Right Hon. A. Lyttelton, the Secretary of State for the Colonies and M.P. for Warwick and Leamington, who, in proposing the Royal toasts, referred to the great anxiety which prevailed in regard to the foreign relations of this country. Mr. Lyttelton also gave the toast of "The British Medical Association" and rendered a high tribute to the work that the medical profession was doing in tropical climates, instancing the remarkable reduction in malarious fever cases which had recently taken place at Suez. He had also quite lately received reports from the Gold Coast, Sierra Leone, and Lagos, which showed a tendency to the same good results in those places. Dr. Collier, in responding to the toast, gave some interesting details of the extent to which the British Medical Association had spread its organisation over the British Empire. After luncheon the guests repaired in conveyances to Warwick where they were shown over the castle and grounds and entertained to afternoon tea by the Countess of Warwick. A drenching rain somewhat marred the pleasure of the return drive to Leamington where an illuminated concert took place in the Jephson Gardens in the evening.

THE ADJOURNED GENERAL MEETING.

The adjourned general meeting was held on July 29th at the Reception Rooms in the Examination Hall, when Dr. W. COLLIER, the President, announced that an invitation had been received by the Council to hold the Annual Meeting next year at Leicester, which had been accepted. He then nominated amid applause Mr. G. C. Franklin, of Leicester, as President-elect.

THE SECTIONS.

MEDICINE.

WEDNESDAY, JULY 27TH.

Dr. DAVID NEWMAN (Glasgow) referred to a valuable series of 26 cases of

Renal Disease

in which the urinary signs were associated with pain in the kidney and in which nephrectomy had been performed, the capsule and the congested kidney being incised. In a large proportion both the pain and the albuminuria had been relieved, these symptoms having ultimately disappeared in 11 cases. It was important in such cases to decide whether one or both kidneys were the source of the albumin and tube casts by catheterising the ureters and by cystoscopic examination of the orifice of the ureters. He advocated venesection for uræmia and described a special method of his own for the relief of œdema by acupuncture.

Dr. W. RINGROSE GORE (Whitchurch, Salop) discussed the various causes of nephritis from the point of view of treatment.

Dr. SAMUEL WEST (London) read a paper on

A Disseminated Form of Croupous Pneumonia in Children,

or primary broncho-pneumonia, in which he differentiated two forms of broncho-pneumonia as occurring in children. One of these varieties corresponded to the form usually described in text-books and the other was similar in its clinical course and temperature curve to the croupous pneumonia of adults but anatomically consisted of disseminated foci of hepatisation.

Dr. THOMAS MCCRAE (Baltimore) read a paper entitled

Acute Lymphatic Leukæmia, with the Report of Five Cases.

The features of the five cases were described. All were males. The ages varied from three to 21 years and the duration varied from 13 days to eight weeks. The average blood count showed hæmoglobin, 35 per cent.; red cells 1800; and leucocytes, 104,000 per cubic millimetre. In every case the lymphocytes were over 90 per cent. of the total leucocytes. An unusual point was that in three of the cases the prevailing type of white corpuscle was the small lymphocyte. The cases in literature were discussed and the very common severe anæmia was dwelt upon as suggesting that it might be better to consider that the changes in the red cells were as important as those in the leucocytes in acute lymphatic leukæmia. Considerable importance was to be attached to the changes in the bone marrow, especially in the cases without glandular enlargement, as helping to fix the seat of the essential changes in the disease. In regard to the etiology the condition suggested a severe toxæmia but the essential cause had yet to be found.

Mr. H. G. ARMSTRONG (Wellington College) read a paper on

Functional Albuminuria.

This symptom occurred in males of from 15 to 25 years of age. Two types of cases were met with—the florid subject with high tension, and the pale, flabby subject with low tension. A neurotic family history was usually present. The symptoms associated with functional albuminuria were apathy and disinclination for work, fainting attacks, and cardio-vascular instability. The symptoms were influenced by posture and readily disappeared on resting. As regarded treatment it was a mistake to prevent the patient from taking exercise; only long distance running and hard rowing should be prohibited. Tonics were indicated in the flabby anæmic cases. The prognosis was very favourable except where the mistake was made of putting the patient to bed on milk diet. A ready method of bedside testing of the urine with tablets of salicyl-sulphonic acid (one grain) was recommended.

THURSDAY, JULY 28TH.

The Treatment of Tuberculous Pleural Effusion and Pneumothorax.

Professor WILLIAM OSLER (Baltimore) opened a discussion on the above subject, remarking, in the first place, that there were three forms of pleural effusion—the pyogenic, the pneumonic, and the tuberculous. The large majority of cases were tuberculous. In the absence of pneumonia or of sepsis a case of pleural effusion was to be regarded with suspicion as tuberculous. He referred to a case of acute pleural effusion occurring in a girl, aged 14 years, who had aortic and mitral valvular disease, with fatal termination; the necropsy revealed a tuberculous pleurisy. Among 176 cases of pleural effusion 30 per cent. of those who could be traced two years after the attack had died from tuberculosis. As aids in diagnosis he considered the study of the exudate and of the sputum and the tuberculin test. In tuberculous effusions the cellular elements of the fluid belonged chiefly to the variety of lymphocytes, in contradistinction to the polynuclear granular cells found in effusions of septic origin. Out of 195 cases of pleural effusion without any definite history or sign of pulmonary tuberculosis in 30 cases tubercle bacilli had been found in the sputum. Certain clinical features pointing to a tuberculous effusion were an insidious onset, early thickening of the pleura, and early retraction of the affected side. For discussion three points were suggested: (1) the importance of early and repeated aspiration, used as the chief means of treatment and not merely as an adjunct; (2) the question whether drugs were of any use; and (3) the necessity of careful after-treatment, both local and general, in every case of tuberculous pleurisy. As regarded the first point it had been taught in the past that aspiration need not be performed until symptoms became urgent, one side of the chest was full, or a moderate-sized effusion had lasted without signs of diminution for several weeks. Professor Osler referred to a paper by Dr. Delafield of New York, published in the *American Journal of the Medical Sciences*,

December, 1902, containing records of a series of 200 cases of pleural effusion treated by early tapping with remarkably favourable results, no fewer than 64 having been cured within a week. Professor Osler considered that the early removal of fluid was often directly curative and it prevented the formation of dense adhesions. The occurrence of pneumothorax was a very rare complication after tapping; it never occurred in the case of an acute effusion. In chronic cases with recurrence of fluid after repeated tapping free incision and drainage were probably the best method of treatment. With regard to drugs, salicylates, iodides, and diuretics were still employed by many, but he did not consider them to be of much value. Cases of pleurisy should be treated with carefully selected and systematic pulmonary gymnastics as soon as tapping had been performed. Even while confined to bed the patient should begin by blowing water from one bottle to another. Deep breathing exercises should be continued for a long time after the attack of pleurisy and the open-air treatment suitable to all forms of tuberculosis should be carried out. Professor Osler demonstrated a useful breathing exercise which expanded the affected side of the chest to its full extent, the other side remaining practically rigid. The treatment of pneumothorax was not considered very hopeful, as 67 per cent. of 49 cases had died. Three groups of cases had to be considered: (1) the traumatic, the spontaneous, those following abscess or gangrene, and some tuberculous cases required no treatment at all; (2) some cases of acute pneumothorax with urgent symptoms demanded immediate operation, and a smaller number of cases of suppurative pneumothorax required free opening of the chest in order to convert a valvular into an open pneumothorax; and (3) a few of the cases of pyo- and sero-pneumothorax might be treated as West had urged, by radical operation as in empyema.

Dr. G. A. GIBSON (Edinburgh) said that there was room for discussion on the difficulty of diagnosing a tuberculous pleurisy from effusion due to other causes. Examination of the urine often aided the diagnosis in these cases. In many cases he had found the diplococcus of rheumatism in the urine and he was of opinion that the urine should be examined in all cases of pleurisy because serous pleural effusion of rheumatic origin often occurred. With regard to treatment, the value of repeated tapping was not to be overestimated and he had found tuberculin useful in some cases. Carefully graduated physical exercises should always be ordered after apparent cure of pleural effusion. In his experience when pneumothorax occurred suddenly, due to muscular or other strain, in subjects of robust health, recovery was usually complete.

Mr. STANLEY BOYD (London) said that operation was demanded always in acute cases. He suggested that when tapping became necessary more and more frequently in cases of chronic pneumothorax it might be advisable to drain the cavity slowly by means of fine cannulæ. The lung would thus have a chance of rest but he admitted there was a danger of setting up pyopneumothorax by such a mode of treatment. He described several cases of pyopneumothorax in which he had operated, removing large portions of the ribs; the results had not been encouraging, five out of six having died.

Dr. SAMUEL WEST (London) considered that the term "rheumatic pleurisy" as usually employed was misleading and should be limited to cases due to the diplococcus of rheumatism. He agreed as to the importance of aspiration. Pleural effusions rarely changed their character—serous remained serous, as a rule, but a serous might be converted into a purulent effusion by septic instruments. Aspiration was a dangerous operation as often performed; pneumothorax, cough, and respiratory embarrassment were a few of the complications of unduly rapid exhaustion by aspiration. Empyema, even of tuberculous origin, should be treated as were other forms of empyema, by incising the chest wall freely and washing out the cavity. The ribs should not be excised. If drainage by a tube appeared defective examination with a probe too frequently revealed the fact that the tube was not in correct position for drainage. Estlander's operation had usually a fatal termination and a modified Estlander's operation was useless. A pneumothorax should be tapped early and tapped as often as necessary; the ribs should be removed when repeated tapping failed to give relief. He summed up the treatment briefly thus: (1) if air alone was present and the symptoms were not urgent the case should be left alone to recover; and (2) if fluid formed it was necessary to find out whether serum or pus were present. If serum were found the air would be absorbed and the case would run the course of an ordinary serous effusion. If pus were found the prognosis of neglect in such cases was so grave that he recommended the side should be opened and freely washed out at once.

Dr. NATHAN RAW (Liverpool) briefly described 13 cases of pyopneumothorax. Two had been treated by incision and pus, air, and tubercle bacilli were found. Both had become septic and died. Of 11 others treated by aspiration two recovered after repeated aspiration. He considered that unless symptoms were urgent cases of tuberculous pneumothorax should be left alone. He did not agree with Dr. West as to the advisability of incision in tuberculous cases, as in his experience the wound was slow in closing and septic organisms entered by the wound.

Dr. R. W. PHILIP (Edinburgh) discussed the question of lymphocytes in the pleural effusion and tuberculin as means of diagnosing tuberculous effusions. He considered free exposure to open air as valuable a method of treating tuberculous pleurisy as other tuberculous conditions. During the time a tuberculous pleural effusion existed raw meat was very valuable. He recommended early aspiration, if possible within the first 24 hours of discovering the presence of fluid. The fewer drugs administered the better. Potassium iodide, indeed, was injurious in many cases; diuretics were useless.

Dr. T. D. ACLAND (London) did not recommend early tapping for serous pleural effusion in children as he had seen it absorbed rapidly when left alone. He doubted the possibility of pleural adhesions forming as a consequence of leaving a small amount of tuberculous fluid in the pleural cavity. If the effusion was purulent the correct line of treatment was more difficult to decide; if the condition was confined to the pleura, forming a local tuberculous abscess, it should be dealt with; if it were part of a general tuberculosis it should be left alone. He had practised washing out the pleura but had found that on opening the chest wall pyogenic organisms entered and made matters worse. In hæmorrhagic effusions frequent tapping was the best method of treatment. As regarded the treatment of pyopneumothorax he could not agree with Dr. West that the case should be dealt with according to the ordinary surgical principles in presence of a pus-secreting cavity. Certain urgent cases demanded immediate operation but the majority should be left alone.

Dr. J. BARR (Liverpool) demonstrated his method of syphoning fluid from the chest, followed by the pumping in of sterilised air and a small quantity of adrenalin. This latter remedy, he believed, prevented further accumulation of fluid.

Dr. J. E. SQUIRE (London) endorsed the views of Dr. West. Pneumothorax rarely required urgent operation; the patient should be watched carefully for the first few hours after the onset of the pneumothorax; if he survived the first half to one hour he usually recovered.

Professor OSLER, in reply, urged the great benefit attending early aspiration in pleural effusion.

Dr. RAW read a paper on

Human and Bovine Tuberculosis

in which he summarised his communication at the British Medical Association meeting in 1903.[1] He considered that man was attacked by two varieties of the tubercle bacillus: (*a*) bovine tubercle, occurring especially in children fed on tuberculous cow's milk, attacking chiefly the serous membranes, bones, and glands, the disease in this case being chronic and less dangerous than (*b*) human tubercle, the usual form met with in adults, attacking especially the lungs, due to inhaled dry sputum or contagion, the disease in this case being more acute and dangerous. In cattle a general tuberculosis had been produced by inoculating them with tubercle obtained from young children, but when cattle were inoculated with adult tubercle they had remained healthy. It was probable that these types were antagonistic and that bovine tuberculosis in children protected them from adult human tuberculosis. He was at present engaged in taking the serum from tuberculous cattle with the intention of employing it for the cure of adult human tuberculosis.

Dr. W. MITCHELL STEVENS (Cardiff) read a paper on the

Clinical Features of Splenic Anæmia

and described eight cases that had come under his observation.

[1] THE LANCET, August 15th, 1903, p. 473.

DR. H. LEWIS JONES (London) read a paper on the

Current Curves of Medical Induction Coils.

Oscillograph tracings were shown with the lantern and these demonstrated that the presence of an iron core had the effect of lengthening out the discharge waves. Long windings also had this effect but their influence was less than that of the iron core. Long impulses stimulated sensation painfully; short impulses acted well upon motor fibres and muscle. Short coils without iron acted almost painlessly upon muscle. As the iron core was necessary for the operation of coils, unless an independent mechanical break could be employed, Dr. Jones advised the use of a copper tube as a regulator when testing muscle, the copper tube to be interposed between the core and the secondary windings. Currents interrupted mechanically were likely to replace coil currents for accurate work. Dr. Jones showed a form of interrupter which he had used to the complete exclusion of coil currents for the testing of muscles during the past six months in the electrical department at St. Bartholomew's Hospital. It was superior to the coil because its currents could be measured, it was less disagreeable to the patients, and its curves of current were always alike. Tracings of the current of this instrument were shown.

MR. HASTINGS GILFORD (Reading) exhibited a collection of photographs of cases of

Ateleiosis and Progeria,

and showed four living instances of ateleiosis. The word ateleiosis (not arriving at perfection) had been applied to a form of delayed development or infantilism, differing from other kinds of infantilism in having no obvious cause and in being of very pronounced type. There were two varieties: 1. The asexual variety in which the development of the sexual organs was more backward than that of any other part. A man, aged 30 years, was shown whose sexual organs were infantile; his facial appearance, height, weight, proportions, dentition, and ossification were childish. Growth was continuing at a very slow rate. His mind seemed to be that of a child who had undergone many years of experience. A second case of the same variety was exhibited, that of a boy, aged 14 years, whose development was like that which is usual at seven years of age. 2. An instance of the sexual variety of ateleiosis, a man, aged 38 years, was shown. His size, proportions, facial characters, and dentition were those of childhood, but in regard to his skeletal and generative organs he was a man. He was married to a woman of ordinary stature and was the father of seven children, of whom all were of ordinary size except one. This exception was a boy, aged 12 years, whose stature and skeletal and general development were equal to those which are usual at about half his age. This boy (who was also shown) seemed to serve as a connecting link between the two varieties of ateleiosis. Charles Stratton or Tom Thumb was a good instance of the sexual form of ateleiosis. The word progeria (*progeros*, prematurely old) was used for a disorder of the opposite nature to ateleiosis, those affected with it becoming senile with great rapidity. Enlarged photographs of two of these cases were shown. One of these patients died from angina pectoris at 18 years of age. The post-mortem examination showed advanced calcareous degeneration of the heart and aorta and other senile changes.

SURGERY.

THURSDAY, JULY 28TH.

MR. J. BLAND-SUTTON (London) opened a discussion on

Hysterectomy.

He commenced by pointing out that while hysterectomy was only performed by the abdominal route the results were certainly bad but that they began to improve immediately the vaginal route was adopted. Even then, however, the remote results were unsatisfactory. He continued: "The principles on which the operation of hysterectomy should be based depend on the proclivities of the disease. Thus cancer of the cervix of the uterus mainly affects those who have been pregnant and tends to spread to the adjoining surfaces of the vagina and so to the bladder and rectum. Cancer of the body of the uterus, on the other hand, affects mainly elderly unmarried women and tends to spread to the broad ligaments and to the Fallopian tubes. Primary cancer of the Fallopian tubes was first described in 1888. The uterus may also have to be removed for fibroids. In some respects hysterectomy for fibroids surpasses in importance the operation of ovariotomy itself. The fibroids which are especially troublesome from hæmorrhage are the soft myxomata and some of these have been called sarcomata but I do not believe that fibromata ever become sarcomatous. There are four reasons why hysterectomy may be required for fibroids: (*a*) from long-continued hæmorrhage; (*b*) from gangrene of fibroids; (*c*) impaction of fibroids; and (*d*) because the fibroids threaten the patient's life during the puerperium. Enucleation of fibroids is practically impossible except in a few cases. In young married but sterile women it may be worth while to endeavour to remove uterine fibroids while leaving the uterus, but in only a few instances have the patients subsequently become mothers. In nine instances I have removed fibroids from a pregnant uterus and in only one case was the child not born alive. With regard to the exact mode of operation, those who advocate panhysterectomy say that the danger to the ureters is exaggerated but the danger to the ureters is *not* exaggerated, for in 152 cases in which the uterus and cervix had been removed for carcinoma the ureters were damaged in 19 cases. I consider that as a rule the supravaginal operation is the best for sterile women with a long cervix, but if the patient has borne children and is over 40 years of age, then panhysterectomy is to be preferred. One argument that has been used against the supravaginal operation is that the cervical stump is liable to become cancerous. This objection is well founded in a very few cases, but generally when the disease appears in the stump after supravaginal hysterectomy, it is because the disease is already affecting the cervix at the time of operation. Less than 20 years ago it was almost a routine practice to remove the ovaries and to leave the uterus in cases where there was much hæmorrhage from fibroids. I am sure that the reverse is the better course—namely, to remove the uterus and to leave the ovaries. The patient is very much better if she possesses her ovaries and even if only a portion of an ovary can be left it is an advantage. It is true that the benefit of leaving the ovaries is only temporary, for after hysterectomy they always atrophy, but the menopause thus produced is far better than the sudden menopause produced by double oöphorectomy. Another condition requiring hysterectomy is diffuse adenomyoma of the uterus which is very often mistaken for carcinoma. Acute septic endometritis has been treated by hysterectomy, but it can only very rarely be successful. Hysterectomy will also be required when the uterus has been involved in a tubal pregnancy. As to the "ethical" aspect of hysterectomy, some have doubted the justifiability of the operation, but it must not be forgotten that the uterus is merely a temporary organ, active for only 20 or 30 years, and that after it ceases to become capable of fulfilling its functions a woman may be perfectly well. Therefore if disease requires it there need be no hesitation in performing a hysterectomy on this account." Mr. Bland-Sutton did not describe the operation but distributed a pamphlet containing a description of his methods.

The discussion was continued by the reading of a paper by MR. ALBAN H. G. DORAN (London). He described a case of Fibromyoma of the Mesentery weighing 30 pounds. After referring to the literature of the subject collected by Bégouin and Julliard Mr. Doran related the particulars of his own case. The patient was a woman, aged 34 years; she had noticed an abdominal swelling for about six months; it grew very large without causing any pain or symptoms of obstruction. It was soft and gave a sense of fluctuation. A diagnosis of ovarian tumour was made. On exposure at the operation it was found to be invested by the anterior or upper layer of the mesentery. It was enucleated with ease as there were no adhesions; nor was any resection of intestine necessary. The capsule was drained and the patient made a good recovery. Mr. Doran described the anatomy of the capsule in this and in similar cases and spoke of tumours encapsuled in other peritoneal folds besides the mesentery proper. A table was given containing clinical particulars of the case and of 12 other cases of the fibroma and myoma type encapsuled in the mesentery. In three of these cases the patient was a male; hence tumours of this class did not necessarily arise from elements associated with the female genital tracts. The question of diagnosis was discussed. As to treatment, if the growth was a fibromyoma removal by operation though dangerous was the right course. The

precise relations of the tumours varied greatly and extensive resection of bowel was often needed, especially when there was a relatively small tumour involving several coils of intestine in its capsule. All the 13 operations in the table were complete except one which ended fatally. Possibly complications might be met with in future cases, as in operations for other types of mesenteric tumour. Lastly, the treatment of shock after the removal of such large tumours and the management of the capsule were considered.

In continuation of the discussion Mr. C. H. J. LOCKYER (London) read a paper on the Special Features and Modes of Treatment of True Cervical Fibroids, giving an account of two cases. In the first of these the tumour was removed by myomectomy; it was a very large growth in a woman, 22 years of age. The upper limit reached to the umbilicus but owing to the fact that the tumour had caused full dilatation of the os uteri its removal was not difficult. The uterus involuted well and measured only two inches by the sound one month after the operation. Two and a half years later the patient returned with a similar growth in the cervix and panhysterectomy was performed and the recovery from operation was complete. Both tumours were true cervical fibroids and both were benign. In the second case a true cervical fibroid was diagnosed by the corpus uteri being felt lying upon the tumour and not entering into its formation, and by the tumour fitting into the vagina like an egg in an eggcup, by the absence of vaginal cervix, and by the high anterior displacement of the external os. The tumour and uterus were removed by abdominal panhysterectomy, and the patient recovered. The uterus was very adherent to the bowel and it contained 12 other growths besides the large cervical fibroid. Mr. Lockyer drew a sharp distinction between the interstitial cervical fibroids which are invested by the wall of the cervix and so-called cervical fibroids which grow out from the cervix into the parametrium. For true cervical fibroids myomectomy was the operation *par excellence*, but the cases referred to were exceptions to this rule. In the first case after myomectomy had been performed recurrence took place, the simple nature of which was not discovered until after the second operation. In the second case there had been clinical evidence of adhesions of the bowel to the body of the uterus and it was deemed wise therefore to operate by the abdomen.

In the subsequent discussion the following took part: Dr. J. A. SHAW-MACKENZIE (London), Mr. E. STANMORE BISHOP (Manchester), Professor MURDOCH CAMERON (Glasgow), Mr. F. BOWREMAN JESSETT (London), Mr. C. MARTIN (Birmingham), Mrs. SCHARLIEB, M.D. (London), and Mrs. BOYD, M.D. (London).

Mr. R. A. BICKERSTETH (Liverpool) read a paper on Catheterisation of the Ureters.

Mr. A. H. TUBBY (London) read a paper on the

Operative Treatment of Muscle Grafting for Paralysis of the Serratus Magnus Muscle.

He said that the deformity was sometimes bilateral but more often unilateral. It arose from a variety of causes unnecessary to enumerate. In the case quoted it was probably due to infantile paralysis. The patient was a girl, seven years old; the left scapula stood out from the body. On abducting the arm to the horizontal position the scapula was nearer to the vertebral column than on the sound side and the posterior border stood out so much from the chest that the fingers could be inserted beneath it so as to grasp at least the lower third of the bone. When the left arm was put forward horizontally in front of the chest the posterior edge of the scapula receded from the thorax, causing a deep groove at this part. Elevation of the arm above the shoulder was much weakened and there was considerable diminution in the reach of the left arm. The external thoracic nerve and the muscle itself gave the reaction of degeneration. It appeared to be hopeless to expect any improvement by the usual methods of massage and electricity, so Mr. Tubby determined to try to transfer some power from a healthy muscle. He decided to attempt to utilise a portion of the pectoralis major. An incision was made over the anterior border of the axilla; a flap of skin and subcutaneous tissue was then turned down and a large part of the sternal portion of the pectoralis major was exposed; its attachment to the humerus was then freed and the muscular fibres of this portion were separated from the surrounding tissues for a considerable distance. Then the serratus magnus was exposed and was found to be pale and atrophied. The cut-end of the pectoralis major was separated into several fasciculi and these were then stitched into the serratus magnus over an area corresponding to four or five digitations of the latter. The wound healed well and six weeks later there was no perceptible difference in the prominence of the inferior angles of the two scapulæ. Further, the child could abduct the extended arm well above the horizontal position and had acquired the power of thrusting the arm forward. The improvement had been fully maintained up to the present time and there was no loss of power in bringing the arm across the chest, in spite of the diversion of part of the pectoralis major. Although this was a single case the method deserved further trial.

Dr. HERBERT SNOW (London) read a paper on

Cancer Facts and Fallacies,

in which he advocated the formation by the British Medical Association of a cancer committee the duty of which should be to put on a scientific basis the numerous facts already known respecting the causes and phenomena of cancer. It was essential that the cases of cancer should be properly classified, as at present the facts concerning various forms were all put together, rendering valueless any conclusions that might be deduced from them.

OBSTETRICS AND GYNÆCOLOGY.

WEDNESDAY, JULY 27TH.

The proceedings were opened by the President, Dr. F. H. CHAMPNEYS (London) cordially welcoming Professor Olshausen and Professor Schultze of Berlin to the meeting. He then called upon Sir ARTHUR V. MACAN (Dublin) to open a discussion upon the

Treatment of Accidental Hæmorrhage.

In the course of a valuable and well thought-out paper Sir Arthur Macan reviewed the nature, causes, and mechanisms involved in the consideration of cases of accidental hæmorrhage. He said that no satisfactory treatment had so far been devised for dealing with accidental hæmorrhage—that at any rate was the dictum of Holmes to whom he expressed his indebtedness for a paper previously published on the subject. He considered that systematic plugging of the vagina was the best procedure. He carefully reviewed the conditions of disease which gave rise to accidental hæmorrhage—e.g., scurvy, hæmophilia, nephritis, and the like, and showed how these conditions lent themselves to defeat the forces of nature usually employed in order to arrest hæmorrhage. He also discussed the mechanisms of labour which led to premature separation of the placenta as regards the uterus—e.g., the contraction ring of Bandl, the internal os, the conditions of the uterine walls, and the like; the condition as regards the placenta—unusual sites of insertion, short cord, and variations of intra-uterine pressure; and stated that he did not believe that a healthy uterus could be overdistended by blood clot. He dealt with the subject under five chief heads: (1) causes of the hæmorrhage; (2) causes increasing the hæmorrhage; (3) causes lessening the hæmorrhage; (4) causes making it appear externally; and (5) causes maintaining it internally; and he then discussed two questions: (1) the result of rupture of the membranes and (2) the result of uterine contraction. The consideration of the first led him to decide in favour of plugging the vagina in preference to rupturing the membranes. He considered that the tone of the uterus controlled the hæmorrhage and if the hæmorrhage was small and primary then it was in the centre of the placental site and gradually extended in concentric rings outwards and that the uterine contractions tended to diffuse the hæmorrhage and to cause it to spread. Rupture of the membranes lessened the intra-uterine pressure and so increased the hæmorrhage and if the uterus did not commence to contract then there was nothing to control the hæmorrhage. In certain cases the contractions of the uterus actually increased the hæmorrhage. Every hæmorrhage was originally internal and there were many degrees between the internal and the external. The signs of hæmorrhage were pain, tension, and anæmia, and external blood and clots. The symptoms were out of all proportion to the amount of blood lost. The diagnosis of combined internal and external hæmorrhage was most difficult. With regard to treatment he considered prophylaxis was important, as in hæmophilia, scurvy, nephritis, and the like. The hæmorrhage should, if possible, be stopped without emptying the uterus; if this were not feasible then the uterus

should be emptied rapidly. He finally reviewed the methods of accouchement forcé by Hegar's dilators, Bossi's instrument and others of like nature, the bags of Barnes and Champetier de Ribes, and discussed the advantages and disadvantages of Cæsarean section and Porro's operation, the main conclusion being in favour of plugging the vagina. He deprecated the procedure of rupturing the membranes, though some cases could be treated by that method or by Cæsarean section.

Dr. A. L. GALABIN (London), asked by the PRESIDENT to speak, said that he did not think that the comparison as between rupturing the membranes and plugging the vagina had been fairly put as regards rupture of the membranes. Hitherto he had been an advocate of treatment by invariable rupture of the membranes, but latterly had given some consideration to the method advocated by Sir Arthur Macan of plugging the vagina, and so on. He congratulated Sir Arthur Macan on his able exposition of a tedious and complicated subject.

Dr. J. M. MUNRO KERR (Glasgow) said that he had seen 20 severe cases in the last three years. Six of them were left entirely without any special treatment, the hæmorrhage ceased spontaneously, and the cases ended satisfactorily. There was, in fact, a great tendency for hæmorrhage in such cases to cease spontaneously. He divided cases of accidental hæmorrhage into three classes according to the degree of severity. The vaginal plug he considered the most valuable aid in treatment. In one case which ended satisfactorily he simply ruptured the membranes; in others rupturing the membranes was followed by turning. With regard to accouchement forcé four cases which were so treated ended disastrously. The women died as the result of uncontrollable post-partum hæmorrhage. Accouchement forcé was not a procedure which held out a good prospect of successful termination to a case. He did not like the eight-bladed dilator as it did not admit of a finger being passed up to the os to see how things were progressing. For purposes of rapidly dilating the cervix he preferred Bossi's dilator if rapid dilatation was necessary, though he rather preferred Cæsarean section by the abdominal or vaginal route to accouchement forcé, preferably by the vaginal route.

Professor J. W. BYERS (Belfast) said that accidental hæmorrhage could be divided into two classes: (1) accidental hæmorrhage where there was no appearance of blood externally; and (2) where there was hæmorrhage externally. The latter he regarded as a good sign in that it portended that the uterus was possessed of some contractile tone, and in these cases it would be found that the procedure by rupture of the membranes was permissible. He, however, spoke most strongly in favour of plugging the vagina and congratulated Sir Arthur Macan on his success with this new revival of a useful but unrecognised procedure. He quoted statistics to show that accouchement forcé was attended by a much higher mortality than the procedure by plugging. Not the least advantageous point in the latter was that it gave time for the patient to rally and for the attendant to consider the case in all its bearings. He stated that during the last three or four years there had been within his knowledge about 40 cases treated by plugging without a death, which could not be said of accouchement forcé. He also favourably reviewed Cæsarean section in suitable circumstances and surroundings, but only if it were undertaken with proper assistance and appliances.

Dr. JOHN CAMPBELL (Belfast) said that an important factor in accidental hæmorrhage was the condition of the cervix uteri, according to whether it was dilated or not. He advocated plugging of both the cervix and vagina after douching the vagina with an antiseptic and pulling down the cervix with a vulsellum. He deprecated the use of dilators.

Dr. H. OLIPHANT NICHOLSON (Edinburgh) advocated puncture of the membranes as high up as possible in order to delay the escape of the liquor amnii. Turning should be done as soon as possible and a leg should be brought down in order to plug the cervix. He also discussed those cases of continued hæmorrhage where the uterus bled in a trickling stream for a long period after it was emptied and where there was no apparent laceration of the cervix.

Dr. HEYWOOD SMITH (London) said that in plugging the vagina any size of tampon, small or large, was equally useful.

Dr. F. W. FORBES-ROSS (London) said that the difference between rupturing the membranes and plugging the vagina was really very small in one respect—viz., both procedures tended to cause the uterus to go into repeated and prolonged contraction, only vaginal plugging was somewhat more efficacious. Most of the cases of continuous trickling hæmorrhage were due to unobserved rupture or tear of the cervix in the region of the internal os not visible to cursory inspection. He wished to mention a method of combating shock and hæmorrhage which he had found singularly successful, and that was the continuous and prolonged application to the surface of the abdomen of intense cold, accompanied at the same time by the application of heat to the extremities and chest, with or without rectal injections of brandy or saline solution. This method was most rapid in its beneficial effects, especially in promoting a rapid improvement in the pulse and also the absorption of the injection, and in consequence of the contraction of the abdominal vessels the hæmorrhage was controlled more efficiently and the blood was driven into the brain and extremities where it was wanted.

The PRESIDENT cordially thanked Sir Arthur Macan for his valuable paper.

Sir ARTHUR MACAN, in reply, said that statistics in obstetrics could be made to prove anything and in support of this he observed that Cæsarean section could be shown to have no mortality if it was considered that the operation was undertaken for conditions themselves often mortal. He also preferred Cæsarean section to the delay and continuance of the hæmorrhage during forcible dilatation.

Professor OLSHAUSEN (Berlin) contributed a valuable paper dealing with the

Removal of the Uterus for Cancer,

more especially as regarded the merits of vaginal compared with abdominal hysterectomy. He quoted statistics from his own extensive experience, and from that of others, showing that vaginal hysterectomy was the safer and the more easy method and one which gave from the point of view of thoroughness all that could be expected as regarded the extirpation of the disease. He dealt at length with the difficulties of the procedure advocated by those recommending the abdominal route, especially as regards the removal of glands and connective tissue around the uterus. He discussed the conditions of the pelvic glands and tissues and particularly noted the difficulty of dealing with tissues other than glands. He also showed from statistics that the abdominal operation, at any rate on the continent (Germany and Austria), had a higher mortality than the vaginal operation. He therefore strongly advocated the vaginal operation whenever possible.

Sir ARTHUR MACAN cordially thanked Professor Olshausen for his highly satisfactory contribution and said that he for the most part agreed with his premisses and deductions.

Dr. T. A. HELME (Manchester) said that in the north of England the tendency was for the most part in favour of the abdominal operation, though there were cases which admitted of the easy performance of the vaginal operation.

Dr. FORBES-ROSS pointed out that there must be some cases where the abdominal route was much to be preferred, and he could not see why, if with the improved methods it were right to remove the uterus and appendages by the abdominal route for one reason, the same did not hold good for another reason. Professor Olshausen had mentioned that the abdominal route was advocated by those who insisted on the need of removing connective tissue as well as glands in the pelvis and had laid stress on the fact that it was most difficult to do so. Dr. Forbes-Ross, however, thought that the difficulty as regarded the connective tissue outside the uterus resolved itself into two conditions—one, in which the connective tissue was extensively involved by direct anatomical continuity with the primary growth, and the other where the connective tissue was apparently not involved. In the first event neither the vaginal nor the abdominal route would, if attempted, be of any avail. In the latter event it did not appear to be necessary to remove the connective tissue as well as the glands, for clinical experience showed that in cancer of the tongue it was not necessary to remove all the tissues between the primary disease and the secondary glands. Therefore this difficulty of the removal of the connective tissues should not stand in the way and lead to the total abandonment of removal of the uterus and glands by the abdominal route. Besides, most cases of vaginal hysterectomy, which were successful in that recurrence did not take place at the seat of the original disease but in the deep glands or the liver, were really just those cases which would have done

well if the uterus and glands had been removed by the abdominal route, the connective tissue being left behind. He also thought that the abdominal route afforded easier access to the diseased areas and permitted of a more orthodox anti-cancerous operation than the vaginal route, though, of course, there were many cases in which the vaginal operation advocated by Professor Olshausen was the most correct method, both from the surgeon's and patient's point of view.

Dr. F. EDGE (Birmingham) said that it must often be a question as to whether, after the vaginal operation for the removal of the uterus, all had been done that could be done for the patient, but having heard the able advocacy of so distinguished an authority as Professor Olshausen he thought that the vaginal route for removal of the uterus was strongly preferable and only in certain other circumstances, as peritoneal adhesions, atresia, and so on, would the abdominal operation be indicated.

Dr. MARY SCHARLIEB (London) entered a strong plea for a more favourable view of the abdominal route for the removal of the cancerous uterus, especially in these days of improved technique in abdominal surgery. There were cases —e.g., nulliparæ—where owing to a contracted and narrow vagina the vaginal operation was not easy or even possible; then there were cases where adhesions from old peritonitis would be a source of danger.

The PRESIDENT made some commendatory remarks on the paper and Professor OLSHAUSEN replied briefly to the remarks of the foregoing speakers, saying that there were, of course, certain circumstances in which the abdominal route would be desirable, nevertheless the vaginal route was, in his opinion and experience, the one most to be preferred.

Dr. ROBERT KENNEDY (Glasgow) read a paper entitled

The Treatment of Birth Paralysis of the Upper Extremity by Suture of the Fifth and Sixth Cervical Nerves.

He dealt with the nature and causation of the lesion which he attributed to either partial rupture or complete rupture with cicatricial obstruction of the nerve. He discussed at length the distribution of the paralysis as affecting the deltoid, the spinati, and so on. He carefully considered the indications and time suitable for the operation and pointed out the necessity for moderately early operation as tending to more rapid recovery, especially due to the fact that the muscles were more easily restored than if the operation were long delayed; on the other hand, he pointed out that even in cases of long standing a great deal might be done. He gave an interesting and instructive account of cases which he had operated upon and showed photographs of children whose full powers had been restored after operation. He also carefully described the procedure of the operation necessary for excision of the injured portion of the nerves and their reunion. He strongly deprecated the joining of the cut ends of the nerves to other than their original connexions as unless this were done the result was not so satisfactory.

The PRESIDENT complimented Dr. Kennedy on his success and invited discussion.

Dr. HELME said that he had not seen any cases of Duchenne's paralysis and thought that certain unknown factors tended to its non-observance. He also complimented Dr. Kennedy on his results.

Dr. MUNRO KERR and Dr. CAMPBELL congratulated Dr. Kennedy on his results. The latter said that he had during the last few years seen 20 cases at the children's hospital where he was surgeon and that he had successfully operated on many of them after the manner recommended by Dr. Kennedy.

THURSDAY, JULY 28TH.

The proceedings were opened by the PRESIDENT calling upon Dr. J. SINGLETON DARLING (Lurgan) to read his paper entitled

Removal of Fibromyoma of the Left Ovary 22½ Pounds in Weight,

an account of a rapidly growing fibroid tumour containing some muscular tissue which had contracted adhesions in the peritoneal cavity, thereby rendering its removal somewhat tedious. The presence of a well-marked sulcus on its surface led to its being considered by some of his colleagues to be an enlarged liver; the uterus was free and there was no ascites. It was evidently the largest tumour of its kind on record in this country.

Dr. C. E. PURSLOW (Birmingham) said that it appeared to him to be probably not so much an ovarian fibroid as one of those tumours usually classed as broad-ligament fibroids.

Dr. J. S. FAIRBAIRN (London) pointed out that the specimen shown did not appear to be strictly ovarian as the ovary was not spread out on the tumour as is usually the case with ovarian fibroids. He was inclined to agree with Dr. Purslow that it was a broad-ligament tumour.

Dr. EWEN J. MACLEAN (Cardiff) agreed with Dr. Purslow and Dr. Fairbairn and said that the freedom of the uterus from adhesions to the tumour and elsewhere and also the absence of ascites were noteworthy and interesting.

The section, on the motion put by the PRESIDENT, appointed Dr. Purslow, Dr. Fairbairn, and Dr. Maclean as a committee to consult with Dr. Darling as to the exact nature of the tumour and report to the meeting subsequently. The report was to the effect that there were not sufficiently exact anatomical data available to enable them come to a definite conclusion.

Dr. F. J. MCCANN (London) next contributed a paper on

Two Cases of Urethro-vaginal Fistula treated by Operation.

The first case was highly interesting and instructive and was that of a primipara who had had a lingering first stage of labour with somewhat late application of forceps to a non-descending head. Subsequently she suffered from retention of urine. The further history of the case was that ten days afterwards serious trouble with her bladder supervened and one month after her confinement she was put under the care of Dr. McCann at the Samaritan Hospital, when it was found that the posterior wall of her bladder and urethra were in a sloughing condition and their subsequent separation laid the bladder, urethra, and vagina into one continuous cavity. The patient was with great difficulty brought through the primary stages of her illness and gradually improved till the time when operation could be entertained for the remedy of the existing conditions. Dr. McCann described the difficult and ingenious operation undertaken for restoration of her bladder functions which was successful to a great extent, but he said that the bladder cavity now remaining was a contracted fibrous sac incapable of holding much urine which necessitated the constant use of a urinal. He had found it difficult to obtain dilatation of this sac so far. The second case was one where the base of the bladder and urethra was crushed by the delayed fœtal head. He described the operation undertaken which was highly successful in every respect. He further described an ingenious operation deduced from the foregoing cases and intended to remedy incontinence of urine supervening on over-dilatation of the urethra from any cause.

The PRESIDENT expressed great satisfaction at having heard Dr. McCann's most interesting paper and suggested that in endeavours to dilate the contracted bladder the distensive pressure used should be very slight, for he had noticed that in many cases some incontinence present was due to irritability and not so much to lack of space, therefore gentle graduated pressure in these cases was more efficacious than the more forcible and abrupt applications. It was also most interesting to note the success and efficacy of Dr. McCann's attempts to repair the urethra.

The three following papers presented material of uncommon pathological and practical scientific interest and were discussed together with evident appreciation by the entire section.

Dr. E. SMALLWOOD SAVAGE'S (Birmingham) paper was entitled

An Early Case of Chorion-epithelioma following Hydatid Mole.

This was a carefully worked out account, clinical and pathological, of a case in which subsequently to the removal of a hydatid mole signs of malignant disease appeared. The patient was a young woman. The uterus was removed successfully and showed a small nodule in the posterior wall centrally and another small focus in the left cornu uteri. An excellent series of enlarged photo-micrographs illustrating the minute pathological histology were shown, as well as a complete series of lantern slides.

The paper by Mr. CHRISTOPHER MARTIN (Birmingham) on

A Case of Deciduoma Malignum

was of a similar character. He showed an excellent collection of microscopic slides illustrating the pathology of the condition and gave as well a carefully prepared and lucidly explained lantern demonstration.

The paper by Dr. T. WILSON (Birmingham) on

A Case of Chorion-epithelioma

was a clear account of a rapidly growing neoplasm of the uterus in a young woman extensively involving surrounding tissues and organs. The series of lantern slides exhibited were of especial interest. At the end of his paper he stated that Professor R. F. C. Leith of the University of Birmingham had written a pathological commentary on the three foregoing cases and asked the permission of the meeting to read the same. The commentary dealt with the possible mode of origin and growth of the disease and was an enlightening and instructive exposition of the behaviour and mode of invasion by the epithelium of the chorionic villi.

Dr. MACLEAN said that there was really a very small margin between simple hydatid mole and malignant hydatid mole from a microscopical standpoint. The microscopical distinctions should be clearly understood and carefully applied in order to prevent the removal of a uterus for a non-malignant mole and the retention of a uterus which was the seat of disease after malignant mole.

Dr. MCCANN said that he agreed with Dr. Maclean that chorion tumours of the uterus were not all malignant. In many cases where syncytial masses were absent a high degree of malignancy was developed.

Professor BYERS next read a paper entitled

Suggestions for the Prevention of Puerperal Infection in Private Practice.

Attention was drawn to the progress in the general results of midwifery practice since the introduction of the antiseptic and aseptic methods. This was specially noted in the case of maternity hospitals. Professor Byers gave the statistics from two maternity hospitals—the Rotunda in Dublin and the Belfast Lying-in Hospital—showing that for the past two years out of a total of 8796 cases the total mortality was 0·31 per cent. and the mortality from sepsis was only 0·09 per cent. Turning to general practice he showed by the statistics given him by the Registrars-General of England, Scotland, and Ireland that the same good results were not procured. During the past 20 years 40 per cent. of the total childbed mortality was due to septic diseases. In England and Wales in 1901 2079 deaths in childbed were due to puerperal fever and 2315 were from other causes, accidents and so on. He thought that the difference in these results in maternity hospitals and in private practice must be explained as being due (1) to inefficient practical teaching and clinical training of students and midwives; (2) to the fact that the details of the antiseptic and aseptic methods as employed in maternities were not so carefully observed in private practice; and (3) to a tendency in some cases to meddlesome interference. Certain facts were then brought forward as to the nature of puerperal infection and suggestions were offered for its prevention. The dangers of vaginal examinations in labour were emphasised and the value of abdominal palpation was insisted on and it was urged that nature's action in labour should not be thwarted unnecessarily or supplanted by the methods of art. Nature should be followed and aided, and only when, for one reason or another, the resources of nature proved inefficient should the obstetrician interfere and then he should take the same precautions as the surgeon now did when he performed an operation.

After some remarks from the PRESIDENT, Dr. R. MOWBRAY (Castlederg), and Mr. W. G. NOBLE (London),

Dr. E. T. DAVIES (Liverpool) said that puerperal fever was invariably found in the practice of midwives and not in that of medical men, and trusted that in future owing to the better training of midwives matters would be improved. He cordially condemned the practice of repeated vaginal examination during labour.

Dr. H. CORBY (Cork) thought that undoubtedly repeated vaginal examination caused sepsis and that very often syringing was also the cause of infection. Phlegmasia dolens was, in his opinion, due to septic infection and it would usually be found that the sanitary arrangements of the domicile were out of order.

Dr. J. WARD COUSINS (Portsmouth) said that all obstetric cases should be treated as if they were surgical cases. He also thought that abdominal palpation was now much more used than formerly.

The PRESIDENT thought that those who had syringed their patients formerly should not be blamed, as they were really the pioneers and founders of modern practice and did the best they could in the past. It was therefore not correct to criticise them by the very standards which they had worked so hard to set up.

Dr. MUNRO KERR read a paper on

Cancer of the Cervix complicating Pregnancy, with Cases.

He carefully reviewed the existing practice in these cases and discussed the advantages and disadvantages of (1) pan-hysterectomy; (2) Cæsarean section followed by pan-hysterectomy; (3) Cæsarean section followed by vaginal hysterectomy; (4) Cæsarean section followed by vaginal amputation of the cervix; and (5) vaginal Cæsarean section. He quoted cases illustrating the successful performance of vaginal Cæsarean section.

Dr. WILSON discussed the paper and quoted a case where he performed vaginal Cæsarean section, then split and delivered the uterus per vaginam, removing it and clamping and tying the broad ligaments on either side.

The PRESIDENT regretted that lack of time prevented the full discussion of the preceding paper which was important and interesting.

Dr. MUNRO KERR replied, saying that Dr. Wilson's case was probably the most advanced case illustrating treatment on record.

STATE MEDICINE.

WEDNESDAY, JULY 27TH.

This section met under the presidency of Dr. J. S. HALDANE, F.R.S.

Mr. INNES GRIFFIN took the chair whilst the PRESIDENT read a paper on

Standards of Ventilation.

He said that it was a well-known fact that there was a high death-rate where there was overcrowding or, in other words, a deficiency of air for the number of persons. Much of this could be overcome by ventilation but there were other impurities which rendered the air unwholesome. The effects of vitiated air on health were well known and these he would not refer to, confining his remarks especially to dust, one of the most deleterious constituents. The great mortality among workers in dust-laden air from lung disease had been referred to by many writers and he would endeavour to show how this mortality might be reduced. The death-rate among miners from lung disease was much higher than in any other occupation, while, on the other hand, deaths from other causes were lower. This mortality began at the twenty-fifth year and was maintained at higher ages. The chief cause of the production of dust was the boring machine, an apparatus worked by compressed air, in which frequent and violent blows were given by the drill. When working in certain positions, horizontal or overhead, the drilling had to be done dry and large quantities of dust were created, but if the work was done downwards the hole could be filled with water and very little, if any, dust was created. The rock-drillers suffered most and though few in number in proportion to the number of workmen in a mine the mortality was very high, 74 per cent. dying from tubercle. Coal dust appeared to be less deleterious than rock dust, but in both the dust was cumulative and the damage done was irreparable. Lantern slides were shown of men at work with rock drills. Both in Cornwall and the Transvaal water was used for rock-drilling with most satisfactory results. Poisonous dust such as lead he would not refer to, nor to pollen dust, to which some unfortunate persons were susceptible and on which recent work had been done. There was little doubt that much harm was done by infective micro-organisms, but to what extent they were present in a crowded building it was doubtful, though probably in large quantities. Though ventilation could do much there were other means, more particularly preventive ones. In factories ventilation would not prevent the accumulation of dust and means must be found to avoid as far as possible its formation and dissemination. As regards infective material in rooms expectoration must be avoided as a constant source of risk. In the ventilation of rooms it had been generally assumed that an excess of carbon dioxide was a serious matter. The President did not believe that the amount unless very excessive made any difference at all. He had taken the air in a large number of schools and found it far above that usually stated in books to be positively dangerous, while the children did not suffer. As a matter of fact he had shown that an excess of carbon dioxide in the respired air had a stimulating effect on the

respiratory centre and consequently was readily neutralised by increased respiratory effort, the amount of carbon dioxide in the alveolar air remaining constant. The amount of aqueous vapour in air above or below normal made little difference. Vitiated air had a nasty smell. To what was this due? It was supposed to be an albuminous substance, a volatile poison, but in his experiments he could find nothing to warrant this theory. The reducing power foul air had on potassium permanganate was due to dust. He did not believe this foul air predisposed to phthisis, instancing schoolmasters and teachers, among whom the death-rate for that disease was not high. The effects of burning gas in a room were not very serious unless a large proportion of sulphur was present. All the carbon disulphide should be removed from the gas before supplying it and he regretted to say that there appeared to be considerable laxity among some gas companies in this respect. The actual number of germs present in the air was of little importance, as most were non-pathogenic. It was an established fact that speakers gave off micro-organisms and breathers did not, and he believed that the high mortality among publicans from phthisis was due to the crowded, dusty air and loud-talking persons who frequented public-houses. The two important factors in ventilation were warmth and movement and he believed the success of the open-air treatment of phthisis was due more to the constant movement of air than to its purity. The amount of carbon dioxide in air was still the best standard of the purity of air. His own views did not quite agree with those of the Society of Medical Officers of Health, which in his opinion had fixed its standard too low for ordinary working purposes.

In the discussion which followed attention was called to the fact that the high death-rate among older miners was due to the fact that they worked above ground where there were no precautions to prevent dust or to avoid dust explosions. Factory owners had found the work better done under more hygienic conditions.

Dr. THOMAS OLIVER (Newcastle-on-Tyne) believed there was more phthisis in schoolmasters at the present time than formerly. From his experience in a coal district he had observed that more dust was made by a hard coal and consequently more phthisis was developed. He referred to the wonderful effects of wet drilling as compared with dry, hardly any dust being raised by the former, while in dry drilling it was sometimes impossible to see a person a few feet off.

Dr. A. HAY suggested that the increased respirations produced by excessive carbon dioxide would lead to the inhalation of more dust and hence would be deleterious in this way.

Dr. C. J. JONES believed that the smell of a crowded room was due to clothes and dust, for it had no relation to the amount of carbon dioxide. He had found that the smell began when the carbon dioxide amounted to 10 in 10,000. Schoolmasters he looked on as a selected class—selected for sound lungs; besides they were constantly under medical supervision.

Dr. W. H. SYMONS and Dr. J. H. HUNTER also spoke and the PRESIDENT briefly replied.

At the conclusion of this discussion a motion was passed to be sent to the council suggesting that an abstract of the papers should be printed and distributed in order that those who wished to take part in the discussions might have some idea of what the reader of the paper was going to say.

Dr. OLIVER opened a discussion on

Caisson Disease.

After describing a caisson and the methods of entering and leaving he said that the first fatal case of the disease occurred while the bridge at Saltash was being built by Brunel. The man had been working at a depth of 87·5 feet at a pressure of + 40 pounds. The first pathological account of the effects of compressed air was written by M. Pol and M. Watelle, two French surgeons, in 1854. Since that time many others had appeared. The chief points to be remembered were that with each increase of depth and pressure the men inside should work at a stretch a correspondingly shorter time and the air supplied should be pure and abundant. In Newcastle at the present time a large number of men were being employed in caissons. In the chamber 34 men could work. 750 cubic feet of air per minute was pumped in or 1320 cubic feet per man per hour. Up to 25 pounds per square inch the men worked ten and a half hours out of 12. From 25 to 30 pounds they worked from seven and a half to eight hours, and from 30 to 35 pounds about seven hours; above this the time was regulated by the ability of the men to stand the work. The time allowed the men to pass through the locks was one minute for each five pounds' pressure. Paul Bert was the first to experiment with compressed air on animals and he found an excess of nitrogen. Hill and Macleod showed that there was an increase in the absorption of nitrogen but no alteration in the mean blood pressure or pulse-rate while the animal was in the chamber. When decompression was allowed bubbles of gas were seen in the blood. Paul Bert drew attention to the dangers of oxygen at high tension, which acted as a protoplasmic poison causing convulsions and death. Lorrain Smith had shown that it might also produce inflammation of the lungs and in this appears to act similarly to ether as a duct irritant. The symptoms of the disease came on after the men left the caisson, but might be largely avoided if the men were kept in the lock one minute for each five pounds of pressure. The men complained of pains in the limbs (called "bends"), often of a very serious character. Giddiness, epistaxis, retention of urine, unconsciousness, and delirium were seen. Vomiting, with abdominal pain and analgesia of irregular distribution on the legs, sometimes occurred. Physiologists said that the symptoms were due to the free gas liberated in the blood on the reduction of pressure, the gas being reabsorbed if the pressure was again raised. To prevent the disease only healthy men should be selected for work, short and thin men being more suitable than tall and stout ones. Men about 25 years of age stood the work better than older one, and lengthened service conferred no immunity. Shifts and the decompression should last in time in proportion to the pressure.

Professor J. LORRAIN SMITH (Belfast) referred to his laboratory experiments which showed the effervescence of the nitrogen on reduction of pressure, but he was not quite satisfied that this alone would account for all the symptoms. How was it that age made a difference in liability? Was it due to a better collateral circulation? Could not the oxygen be accountable for some of the symptoms, for experiments tended to show that it had a serious effect on certain animals?

Dr. E. H. SNELL (Coventry) detailed his experience at the Blackwall tunnel, in which the caisson was placed horizontally and not vertically, thus introducing many difficulties and requiring, when passing through gravelly soil, a very large quantity of air.

Dr. OLIVER replied.

Dr. G. F. MCCLEARY (London) read a paper on the

Influence of Antenatal Conditions on Infant Mortality,

but owing to the lateness of the hour there was no discussion.

Dr. D. E. ANDERSON (Paris) handed in a remark to the chairman stating that he believed that excessive drinking of fluids during pregnancy led to venous congestion, excessive liquor amnii, and consequent stretching of the umbilical cord.

In the subsection of Forensic Medicine, presided over by Sir THOMAS STEVENSON, papers were read by Dr. F. SMITH on the Civil Responsibility of the Insane; by Dr. H. H. LITTLEJOHN (Edinburgh) on Wounds of the Throat, with lantern demonstration; by Dr. F. G. WALDO (London) on Notes on the Klosowski Antimony Case; by Mr. R. L. WILLCOX (Warminster) on Infantile Mortality from Overlying; and by Dr. PARKINSON on Rigor Mortis in Newly Born Infants from a Medico-legal Point of View.

THURSDAY, JULY 28TH.

Dr. G. NEWMAN (London) opened the discussion on

Milk-supply.

He said the reason why a proper and efficient control of the milk-supply was necessary was to prevent the conveyance of certain diseases, in which were included enteric fever, scarlet fever, diphtheria, sore throats followed by illness and aberrant forms of disease, epidemic diarrhœa, and tuberculosis. After referring to these in brief detail Dr. Newman said that the belief in this country was that tuberculosis could be conveyed by milk to human beings from cows, but that it probably followed when the udder was affected with that disease. About 20 per cent. of cows suffered from tuberculosis but in only 2 per cent. was the udder diseased. Taking the number of cows in this country as 80,000, yielding an average of 400 gallons per annum,

as much as 32,000,000 gallons of milk were supplied open to grave suspicion and requiring careful watching. Over half the population of this country lived in towns and it was to them that the chief difficulties of milk-supply occurred. The problem was the time that was taken between the milking of the cows and the supply to the consumer. There was practically no control. The sheds were dirty, the cows were dirty, the milkers were dirty, the methods of transport were inadequate, and on being delivered at the retail dealers no means were taken to keep the milk clean. Besides this the consumer often received the milk in dirty jugs and made no effort to keep the milk from dust or dirt. Railways made no special provisions for conveying milk, as was done in Denmark; indeed, the carrying of milk hardly paid the cost. The consumption of milk—such a necessary food for many—was far below in amount what it should be, the average working out at 39 gallons per person per annum, though among the poor this was really much lower, even as little as 1·7 ounces a day. The import trade in milk was increasing and unless the dairy farmers woke up would increase still more. The question of control was treated on broad principles and in DR. NEWMAN'S opinion the demand for reform must come from the consumer. As soon as he let the supplier know that a pure milk of good quality was insisted on the dairy farmer would set to work to supply it. There must be coöperation between the milk vendor and the dairyman, and legislation, instead of hindering both vendor and dairyman, must tend to encourage the trade in milk. At the same time the present legislation must be enforced. The details for reform proposed were that the cows—a good breed being selected—should be kept clean, the animals should be regularly inspected by a veterinary surgeon, the water-supply should be good, and the cowsheds should be kept clean—in short, there should be perfect sanitation of the cowhouses. Sterilisation will not make a dirty milk clean. In addition to this there should be a systematic training in dairy work. Then, too, better railway conveyance was important and Dr. Newman showed how much neglected from a sanitary point of view the conveyance of milk was. At the present time milk-shops had to be licensed, but there was no power to refuse or take away a licence on the score of insanitary premises or neglect of proper precautions. To some extent the supply of dirty milk might be got over by selling it in bottles. Home contamination must be avoided by instruction and much might be done in this direction by visitors among the poor and school teaching. The question how much the selling of modified milk reduced the mortality from milk-borne diseases was next touched on and reference was made to various municipal milk-supplies and the institutions working on much the same lines on the continent.

In the discussion which followed DR. HENRI DE ROTHSCHILD (Paris) emphasised the importance of the consumer demanding a pure supply; this had been done in France with the best results. Among the poor the question was one of price. He described the methods employed in Paris and said that their results had greatly improved since they began this work in 1897.

DR. C. R. DRYSDALE (London) said he believed that many of the large firms selling milk in London conducted their business on the best and most sanitary principles. He believed the conveyance of tubercle by milk was very rare; enteric fever, everyone knew, was carried by it, but this arose from the use of infected water for washing the cans.

DR. S. HALLOWS (London) said he had visited over 50 farms about London and in none had he found the condition satisfactory. The cowhouses were dirty, hung with cobwebs, contaminated by adjacent cesspools, while the milk-cans were dirty beyond conception. He considered inspection by proper officers most essential. The railway companies must be made to carry milk in proper vans and the cans must be sealed. He said it was not an uncommon thing for the porters to open the cans and help themselves to the milk by dipping dirty cups into the milk. The flower-sellers of the West had insisted on special trains and the milk-sellers should do the same. He considered instruction of the people of prime importance and condemned all condensed milks as insufficient in nourishing qualities.

Mr. T. LAFFAN (Cashel) said that many persons could not obtain milk in the winter but means should be taken to enable them to. He insisted on a fixed standard for milk.

DR. G. F. MCCLEARY (London) thought that the reform should not have to come through the consumer but the supplier. The cow was the dirtiest animal on the face of the earth. What was required was cleanliness in production but this unfortunately led to increased cost.

Mr. STOKES, a local farmer, suggested that a conference should be held by the farmers, veterinary surgeons, and medical men. Farmers were quite ready to follow any reasonable suggestions and he believed that bottling the milk would prove a remedy for most of the evils.

DR. NEWMAN briefly replied.

DR. C. J. THOMAS (London) read a paper entitled

Experience of School Diphtheria in the Metropolis.

He had attempted to estimate the proportion of the total amount of diphtheria attributed to school influence, this being most amenable to control. The improvement likely to be brought about by the whole of the elementary schools being brought under one hygienic authority was pointed out. School diphtheria was a personal disease. He detailed the methods of investigation employed, insisting on the importance of class inspection and examination of attendance registers. The children who spread the disease might be divided into four classes: (1) slight unrecognised cases presenting no symptoms; (2) recrudescence of infection in cases after absence for notified diphtheria; (3) cases coming from infectious houses; and (4) those who carried the disease without having symptoms or demonstrable contact. The prevalence of the bacillus in the general population was discussed and the significance of any pseudo-bacilli. Protracted infection was considered and its bearing on the practice of school closure. Closure was unscientific and unnecessary where proper facilities for bacteriological investigation existed. There was needed also education on the subject not only among the general public but also among the general practitioners and the medical officers of health were the persons to do this. Disinfection of houses without swabbing of "contacts" was pointed out.

DR. E. DAVIS, DR. R. JONES, and DR. H. JONES joined in the discussion.

DR. T. W. N. BARLOW (Bootle) read a paper on

The Teaching of Hygiene in Elementary Schools and the Desirability of excluding Young Infants from such Schools.

He referred to some causes of, and efforts made to counteract the causes of, infant mortality and the attitude taken by the education authorities with respect to the teaching of hygiene. He commented on the objections raised and related the scope of teaching adopted at Bootle. He believed it was undesirable to aggregate children at a susceptible age, for it was among those under five years that the greatest mortality occurred.

DR. K. F. LUTOSLAWSKI (Warsaw) remarked on the absence of any information in text-books on personal hygiene.

DR. J. MACGREGOR ROBERTSON (Glasgow) believed that successful instruction in hygiene was not practicable. Already the curriculum was too large and to add hygiene to it was to court failure. Instruction in physiology must go with hygiene and an hour a week, the most that would be given to the subject, was too short a time. To this must be added the great difficulties that there would be to demonstrate the value of hygiene.

DR. JESSIE MACGREGOR (Edinburgh) agreed with the last speaker as regards physiology. Hygiene had been taught most successfully in Japan where instruction was given in physiology, while the teachers received more advanced instruction as well as being taught the care of sick children.

DR. THOMAS said that expert medical advice was required at the Education Office and DR. BARLOW thought the teaching of personal hygiene most important.

DR. ELLIOTT SMITH read a paper on

The Spread of Ankylostomiasis.

It was proved now that infection took place through the skin, the larva working its way down the hair follicles and reaching the blood-vessels and lymphatics. By this means it reached the right side of the heart and pulmonary circulation. From the capillaries it passed into air vesicles and commencing here to grow crept up the bronchi to the trachea, larynx, and epiglottis to the œsophagus and finally to the duodenum. Here it attached itself. It appeared to live on the epithelium and not to suck the blood, so that the anæmia it produced was probably caused by the formation of some toxic substance, this being possibly formed in two glands situated on the side of the mouth of

the larva. The mud of the Nile swarmed with these larvæ and it was through the unbroken skin of the feet that the larvæ gained entrance.

The PRESIDENT said he had found the disease among the miners in Cornwall; these men suffered from anæmia. They also had a pustular eruption on the hands and he thought it might be spread by this eruption. He agreed with Dr. Smith that infection could take place through the unbroken skin.

PSYCHOLOGICAL MEDICINE.

WEDNESDAY, JULY 27TH.

The presidential address by Dr. CHARLES A. MERCIER (London) dealt with the subject of

Criminal Responsibility and Degeneracy.

On this subject, said Dr. Mercier, there had been a difference of long standing between the professions of law and medicine. The difference was largely due to difference of aim. Thus the legal mind approached the question of criminal responsibility mainly with the object of protecting the community from wrong-doers, while the medical mind was apt to regard primarily the individual offender and the justice or hardship of the punishment inflicted on him, and was inclined to strive for the mitigation of punishment. But neither the protection of the community from wrong-doers nor the protection of individual wrong-doers from excessive punishment was the ultimate aim in dealing with criminals. Both of these were subsidiary to the attainment of a still more desirable end—the strengthening of the sense of responsibility throughout the whole community. In the bad old days, before Sir Samuel Romilly, the general sense of responsibility was not strengthened by savage punishment but weakened. The standard of morality was not higher but lower when 20 felons, men and women, were hanged at Tyburn every Monday morning; when 200, 300, 500 condemned prisoners were lying in Newgate at the same time under commuted sentence of death waiting for the ship to take them to Botany Bay; when children were hanged for petty offences; when, on the one hand, an innocent man could be hanged on the evidence of Jonathan Wild, and on the other, no weight of damning evidence could secure a conviction if there was some trumpery verbal flaw in the drafting of the indictment. The most important elements in punishment were discrimination and certainty of infliction and, in the circumstances referred to above, these elements were not only lamentably defective but appeared to be deliberately minimised. It was important to cultivate and to increase the sense of responsibility in all citizens, but this aim was defeated by the spread of the doctrine of degeneration as advocated by certain writers. Dr. Mercier combated and, indeed, ridiculed the use of the term degeneracy as popularly used at present. "If by degeneracy is meant a peculiar diathesis or variety of man, distinguishable from other men by 'stigmata,' that is, by peculiarities of structure, or function, or habit, that are inborn, that are constant in individuals that are so stigmatised, that mark off the degenerate from the normal man, then degeneracy does not exist. The doctrine is unproved and its consequences are pernicious both to the criminal himself and to the community." Dr. Mercier then proceeded to draw a strong indictment against the system of the housing, education, and treatment of criminals carried out at Elmira Reformatory and regarded the methods adopted there as an example of waste, of luxury, and of misapplied philanthropy. The criminals educated and trained there were provided with luxuries by which the wicked man was to be turned away from his wickedness. But these luxuries "did not grow spontaneously nor did they fall like manna from heaven. They were provided for the use and delight of the criminal by the thrift, the labour, the self-denial of law-abiding men. If criminals and scoundrels of every order were thus to be pampered, what was to be done for the upright man, for the honest, law-abiding citizen who saw at the end of a lifetime of ill-rewarded toil and privation, borne with uncomplaining fortitude, no resting-place for his old age more luxurious than the workhouse—that workhouse which was scorned and derided by the occupants of these comfortable reformatories!" Granting all that the fanatics of criminal pampering claimed for their results—"even granting that a certain small proportion of scoundrels might by a course of Turkish baths and lectures on English literature, and the study of Plato, as carried out at Elmira, be weaned for a time at least from a career of crime—was the game worth the candle?" And was it worth spending thousands of pounds of public money in turning a few criminals into indifferent citizens. He thought it was not. Dr. Mercier then proceeded to discuss the question of the punishment and responsibility of criminals from a medico-legal standpoint; dealing with "the legal question" was the *animus nocendi* or *sceleraudi* present, was the act wilful, that was done with knowledge of the act and of its obvious consequences and with intention to bring about those consequences, and, finally, was insanity when present an exonerating factor or not? He thought that insanity was not necessarily an exonerating factor. When the personality of the wrong-doer was so affected by disease, said Dr. Mercier, that not only his will but his desires were also insane, then the case became extremely difficult to decide as regards the degree of responsibility to be attached and he thought that a mitigated punishment most nearly satisfied the ends of justice.

Following upon the above paper a communication received from Sir Herbert Stephen was read.

Sir HERBERT STEPHEN (London) wrote that the question whether or not there existed a "criminal neurosis" was a question not of law but of medicine. He followed the opinions he had heard expressed by Dr. H. Maudsley and Dr. Mercier that such a condition did not exist and if, in his judgment, the existence of such a neurosis was proved or shown to be decidedly probable he should allow medical evidence to be given to that effect, but should advise juries that that was evidence tending to prove the accused person to be guilty. He further would regard the condition of "criminal neurosis" in convicted offenders as a reason for depriving them of their liberty (to commit crime) for as long a period as possible, for the essential point to be apprehended in the proper legal treatment of insane criminals was that some criminals who are insane should nevertheless be treated as criminals, though it might frequently happen that their insanity should be considered a reason for mitigating the severity of their punishment. An epileptic who, in the course of a fit or in the state of unconsciousness following a fit, killed some one, generally a friend or lover and often in the presence of others, had no memory of the act or in a minority of cases had only a faint and clouded memory like the memory of a dream. Such a case ought to be treated merely medically and should suffer no punishment but should be restrained as a precaution against a recurrence of the epileptic attack. When a woman, generally soon after childbirth, killed her newly born child (by drowning or otherwise) she knew that she was killing the child and meant to kill it and did so because being passionately fond of it she had an insane obsession of mind to the effect that death was highly desirable for the child. When the mental obsession had passed off the woman remembered what she did and deeply regretted having done it. He did not consider mere punishment suitable for such cases as these but thought there should be a considerable period of enforced seclusion and submission to some form of discipline, because although the patient's knowledge of her act and of its nature was entirely overcome for the moment by the violence of her mental obsession it was never entirely abolished or suspended as in the case of the epileptic. A third class of cases included those in which the insane affection of the mind was a more remote cause of the crime than in the two previous classes. Here the patient in consequence of his morbid mental affection conceived a violent hostility towards some person. He then, in gratification of his hostility, proceeded to murder his victim, showing premeditation, care, and resolution in effecting the deed, and skill in arranging for his own escape. There was no doubt that the murderer knew as well as possible he was doing wrong, that murder was a sin and a crime, and that he would be punished if caught. His immediate motive was hatred, and the existence of all the provocation that he conceived himself to have suffered should not be counted in the least in exoneration of the immorality or the illegality of his act. Insane criminals belonging to this class ought to be punished. In some cases, though not very many, he thought the full penalty for the offence should follow the conviction exactly as if the offender were perfectly sane. In others where the extent of morbid delusion and insane behaviour appeared to be comparatively great he thought that the punishment should be mitigated. He included in this latter

class the cases where mental disorder amounting to insanity was the original cause of criminal indulgence of the sexual passion, whether the resulting crime was murder or rape.

Mr. A. DOUGLAS COWBURN (London) submitted that "wrong-doer" was too vague and indefinite, that distinction should be drawn between crimes, torts, breaches of contract, and mere moral obliquity. Crime on the one hand was an act or omission punished by society as a wrong against itself. Tort on the other was a wrong inflicted by a man on his fellow, not regarded as a wrong done to the State but as giving rise to a civil action for damages. This distinction was important. Assuming that by "wrong-doer" was meant a convicted criminal he objected to and repudiated the proposition that insanity did not of itself necessarily exonerate him from punishment. He thought that it should. Dr. Mercier had expressed his satisfaction with the answers of the judges in 1843. That was not the opinion of Lord Brampton and Lord Coleridge. Those answers had been repudiated by many States of America, by Italy, and even by Russia. He submitted that the only real, true test was that laid down by the State of New York, "No act done by a person in a state of insanity can be punished as an offence," and applied by the State of New Hampshire in the case of the State *v.* Jones (50 New Hampshire, 1892, p. 369, *et seq.*). This simply left to the jury as matters of fact whether the accused committed the crime in question and whether at the time he was suffering from any disease of the mind and left it there. The difference between mental health and mental disease was a scientific fact entirely within the purview of medicine and with the particular forms of insanity and its essential characteristics the law, as such, should have nothing to do. *Per contra*, responsibility (by which was meant liability to punishment) was a matter purely for the law, and if the law as voiced by the jury under the guidance of the judge did not determine who were to be punished it determined nothing. Juries did not understand difficult psychological matters or elaborate legal criteria and they probably paid no attention to either. They were simple men, perhaps, but very conscientious; they convicted if they thought that the act was committed by an ordinary criminal and they acquitted if they thought the agent was insane. He submitted that if the law of England would follow the American example and would hold that no man should be held criminally accountable for an act which was the offspring of mental disease it would be more in accordance with the dictates of common sense and humanity and would be more likely to solve the difficulties which arise at present. If it was objected that this amounted to no definition at all, that it was too vague, too indefinite, to be accepted he would submit that it was far better in a region where there were so much difficulty and uncertainty that the law should not define at all rather than make a bad definition which, while contrary to its purpose, would be perpetuated by its authority. *Omnis definitio in jure periculosa* was especially true of this subject. They wanted, not "definitions" of insanity nor "criteria" of responsibility, but recognition of the only humane principle, that no man should be criminally accountable for an act which was the offspring of mental disease.

Dr. T. CLAYE SHAW (London) said that there were many degenerate people who were more liable and prone to commit crimes than others. He traversed the statement that insanity did not exonerate the wrong-doer from punishment or that the *animus nocendi* settled the question between the lunatic and the criminal as regards responsibility.

Mr. H. HAVELOCK ELLIS (London) said (in a written communication which he forwarded) that his standpoint was substantially the same as that of Aschaffenburg in his recent book, "Das Verbrechen und seine Bekämpfung." From the strictly medical point of view we were not entitled to use the word "responsibility." Responsibility was not a medical conception; it was a legal and metaphysical conception. It was the lawyer's business to determine responsibility as nearly as he could in accordance with the facts ascertained by the medical man. It was on this basis alone that the existing confusion could be brought to an end.

Dr. G. H. SAVAGE (London) pointed out that degeneracy might and did produce deviations of a character opposite to one another, differing widely from the healthy or normal standard; thus dwarfism and gigantism were both manifestations of degeneracy. Though some delinquents were more mad than bad and others more bad than mad, and delinquents ought to be punished, yet if guided by legal principle they must be, if insane, not punishable. He did not agree with all that Sir Herbert Stephen had said as to the third class of persons who, though insane, yet knew the quality of their acts and so should be punished.

Dr. DAVID YELLOWLEES (Glasgow) said that it was impossible to draw a sharp line between sanity and insanity; that humanity stood on a great slope, on the top of which were sane, reasonable, stable, self-guiding persons; at the bottom were the idiots and the chronic dements; and in the intermediate regions of the slope were the subjects of mental and moral defect and disorder of varying degrees. Whatever the law might say these persons on the slope must be dealt with specially since they were not like normal men and when they committed crime they should be judged more leniently and punished less severely if at all, "according to their position on the slope" of mental development.

Dr. G. FIELDING BLANDFORD (London) said that degeneracy was often due to environment and young children of degenerate and criminal character might, by living and being brought up in better surroundings, become well-behaved citizens. In the case of partial or less severe forms of insanity a mitigated responsibility should be attached to criminal deeds committed by the patient.

Mr. CONOLLY NORMAN (Dublin) said that it seemed to him there was a tendency to "obsession" both on the part of the physicians and the lawyers, one side of the house being oppressed with the fear lest those of unsound mind might be unjustly and cruelly punished, the other lest wicked criminals should escape their deserts through the machinations of foolish medical men. As to the question of responsibility in court he held that that was not a question for the physician and pointed out that Griesinger long ago laid down the maxim and acted upon it when called upon for his opinion on this point.

Dr. ERNEST W. WHITE (Dartford) said that most physicians were agreed that insanity should exonerate a criminal from penal servitude but not from going to a criminal lunatic asylum where he would be subject to moral discipline and surroundings not congenial to his nature and to a deprivation of freedom nearly allied to punishment. Probably nearly all the insane other than dements and aments (idiots) had some knowledge of right and wrong and could be controlled accordingly. There were degrees of responsibility in connexion with the insane which ought to have due consideration. He recognised that the graduated slope described by Dr. Yellowlees did exist and not a precipice dividing mankind into the sane and the insane and that while sanity reigned at the summit of the slope insanity lay at its base and on its sides.

Dr. ROBERT JONES (Claybury) said that the evolution of human thought and conduct in regard to punishment of wrong-doers showed stages of development: first, the primitive legal aspect of retribution in kind—an eye for an eye, a tooth for a tooth. With the progress of human society and the growth of sympathy and of altruism consideration for the individual arose and the protection of society was combined with thoughts for the disciplinary and temporary nature of punishment to be meted out to offenders. Though the sane mind was constituted after a plan or pattern which was approximated by the insane mind there were states of mind in which, owing to the predominance of delusions, the insane criminal could not judge of the nature of his actions and was not influenced by motives which were adequate to influence normal minds. Just as there were grades and varieties of colour-blindness or of deafness, so, he maintained, were there degrees of impairment of thought and reason, varying from slight abnormality to complete dementia, so that responsibility was attenuated and punishment should be mitigated. Insanity exonerated the patient from punishment in accordance with the degree and character of the mental alienation or disorder occurring at the time and he certainly dissented from the conclusion of the President that insanity does not necessarily exonerate from punishment.

Dr. G. E. SHUTTLEWORTH (Richmond) said that idiots occasionally committed murders or crimes of the most senseless and stupid character. He believed that congenital moral imbeciles were born into the world, children whom the older theology would regard as endowed with a "double dose of original sin." Punishment was probably thrown away upon them but there were other children whose moral defects were less marked and who were more capable of being influenced by environment and by appropriate punishment.

Dr. MERCIER then briefly replied.

Lantern Demonstration on General Paralysis.

Dr. DAVID ORR (Prestwich) and Dr. R. G. ROWS

(Whittingham) gave a lantern demonstration with slides showing photo-micrographs of the Degenerative Lesions occurring in the Posterior Columns and Roots of the Spinal Cord in General Paralysis, with remarks on the point of origin of the lesions in tabes dorsalis. It was pointed out that the distribution of the lesion in its earlier stages and the anatomical changes in the nerves as revealed by Marchi's method supported the theory that the posterior nerve-roots were particularly vulnerable at and near their point of entry into the spinal cord and that a toxic agent circulating in the blood was the probable exciting cause of the lesions in question. But why one set of nerve-fibres (Lissauer's zone) of the posterior roots should almost wholly escape while the rest underwent degeneration was a problem that still awaited solution. This brought the day's proceedings to a close.

PHYSIOLOGY.

WEDNESDAY, JULY 27TH.

A paper by Dr. A. P. BEDDARD (London) and Dr. E. I. SPRIGGS (London) on

Some Points in the Metabolism of Diabetes with Reference to Present-day Treatment

was read by Dr. Spriggs and showed that the sudden withdrawal of carbohydrates from the diet of a diabetic patient was wont to be followed by symptoms of nausea, vomiting, weakness, loss of weight, and the odour of acetone in the breath, and that the metabolic changes as determined by daily estimation of the nitrogen, ammonia, sugar, acidity, and oxybutyric acid of the urine were precisely the same as those of coma—a condition which, indeed, such sudden deprivation of carbohydrates not infrequently brought about. The most prominent change in the urine was a rapid rise in the proportion of nitrogen secreted as ammonia—e.g., in one case from 7 to 29 per cent. The blood also became less alkaline and contained less carbon dioxide. The noxious material which gave rise to these symptoms of acid-poisoning could hardly be derived from carbohydrates, since the removal of carbohydrates was followed by its increase. Administration of large doses of sodium bicarbonate caused a general improvement in the condition of the patient, disappearance of the smell of acetone in the breath, and diminution of the ferric chloride reaction of the urine, although there was no marked change in the amount of sugar excreted in the urine. The ferric chloride reaction and the weight of the patient supplied much more trustworthy evidence of his condition than the amount of sugar in the urine. It was advisable when carbohydrates were removed from the diet of a diabetic patient to give large doses of bicarbonate of sodium until the urine became neutral, but it was necessary to watch for possible disturbances of digestion and œdema produced by the alkali.

Dr. W. LEONARD BRADDON (Seremban, Malay Peninsula) read a paper on

A New Method of Staining Red Blood Corpuscles.

By using a solution containing ½ per cent. of ordinary methylene blue and 1 per cent. of potassium citrate structures which he had called "mycoid bodies" could frequently be demonstrated inside red blood corpuscles. It was, however, essential that the blood should not have been previously dried as in the ordinary method of staining blood films. The appearance of these bodies suggested that they were living organisms such as myxomycetes, but they might conceivably be nothing more than coagula. They occurred in small numbers of corpuscles in most apparently healthy animals but they were never present in large number except in illness.

A paper by Dr. F. GRIFFITH (Liverpool) and Dr. W. B. WARRINGTON (Liverpool) on

The Varieties of the Cells of the Spinal Ganglia and their Relationship to Axons of Different Distribution

showed that Nissl's method had in the hands of Lugaro shown five different types of cells in the spinal ganglia. Dr. Griffith and Dr. Warrington had by section of various nerves attempted to ascertain the peripheral connexion of these different nerve cells. After removal of the stellate ganglion they observed changes in cells of Lugaro's "dark obscure type" in the first five thoracic spinal ganglia, these cells having a diameter of 30μ to 40μ. The axons divided were probably afferent nerves from the heart and lungs, and it was interesting to note that since the afferent fibres of the splanchnic nerves arose from regions as high up as the fourth thoracic segment the same segment of the cord supplied both abdominal and thoracic viscera, and thus the observed overlapping of sensory areas of referred pain in diseases of the stomach and of the lungs could be accounted for. After section of the "hamstring nerve" chromatolysis was detected in the sixth, seventh, and eighth thoracic spinal ganglia, the changes occurring principally in the largest cells (over 80μ) but also in smaller cells down to 30μ. The nerves to the muscle spindles appeared therefore to arise from the largest cells—those of Lugaro's "large clear type." After section of the internal saphenous nerve there was chromatolysis in cells 28μ—71·5μ in diameter found in the sixth lumbar spinal ganglion, most of them belonging to the "obscure type." Coarsely granular cells and cells of the smallest type, less than 30μ across, never showed chromatolysis. Donaldson's enumeration of nerve cells of spinal ganglia pointed to the latter as immature cells not yet possessed of an axon.

Dr. ROBERT KENNEDY (Glasgow) read a paper on

The Histological Changes occurring in Ununited Divided Nerves.

The changes in the peripheral portion of a nerve severed from its central connexions consisted of (1) pigmentation and eventual complete absorption of the old axis cylinders and their myelin sheaths, leucocytes and connective tissue cells invading the nerve; and (2) almost simultaneously with the beginning of the former process proliferation of the cells situated between the sheath of Schwann and the medullary sheath. Study of the later changes occurring in the peripheral segment left no doubt that the chief function of the proliferation of the neurilemma cells was a regenerative one and that the cells in question gave rise to new nerve fibres. This regeneration progressed only up to a certain point so long as the peripheral portion of the divided nerve remained isolated from the central end but reached its highest point in those circumstances within a few weeks. It could then readily be demonstrated by Stroebe's method that fine nerve fibres were present, possessing an axis cylinder surrounded by protoplasm in which were deposited fine drops of myelin, with a delicate sheath of Schwann and well-marked nodes of Ranvier. When the peripheral segment was at an early stage reunited to the central end of the divided nerve precisely the same changes occurred, the only difference being that the young nerve fibre progressed rapidly to adult dimensions. All the above changes occurred in an excised segment of a dog's sciatic nerve grafted in the subcutaneous tissue of the animal's thigh and examined after six months. That the immature nerve fibres described needed little further development to be capable of conduction was shown by the early return of sensation after secondary suture. He had by careful examination of 40 such cases observed return of sensitiveness to the prick of a needle within one or two days of the secondary suture even though the nerves had been divided for long periods—e.g., in one case after 18 months—and the analgesia before the operation had been absolute. In the remaining part of his paper Dr. Kennedy described the structure of the sciatic nerve of a leg amputated at the knee 25 years previously and stated that fine nerve fibres were present in abnormal numbers. This increased proportion of small nerve fibres was best explained on Mayer's view that degeneration and regeneration were constantly taking place as a normal process in nerves, some of the regenerated nerves having in the absence of their normal peripheral connexions to acquire their normal dimensions.

Professor FRANCIS GOTCH (Oxford), in discussing Dr. Kennedy's observations, said that they appeared to prove that axon formation of the type shown in the tail of the lizard, &c., could take place in mammals, but it still appeared extremely doubtful whether axons possessing the true nerve properties of excitability and conductivity could be thus formed in higher animals. Halliburton and Mott had shown that a second section of the nerve caused degeneration in all the fine nerve fibres present in the peripheral part of the previously divided nerve, a result which seemed to show that the fine fibres had somehow entered the peripheral fragment of the nerve by sprouts from the central end. He also doubted the genuineness of the so-called immediate recovery of sensation within a few days of secondary suture, for he had been

struck by the fact that accompanying the apparent hyperæsthesia to such tests as needle-pricks there was absolute anæsthesia to the far more sensitive test of stroking the hairs over the affected region. Head's remarkable investigations on himself showed plainly the difficulty of localising the stimulus so that it should not affect the hyperæsthetic marginal zone of the anæsthetic region.

Professor WESLEY MILLS (Montreal) called attention to the value of Bielschowsky's method of demonstrating the presence of axons, as also did Dr. WARRINGTON.

Professor W. H. THOMPSON (Dublin) thought that Dr. Kennedy had conclusively demonstrated the formation of structurally almost perfect nerve fibres in completely severed portions of nerve trunks.

Dr. H. M. VERNON (Oxford) read a paper on

The Protective Value of Proteids and their Decomposition-products on Trypsin.

The trypsin solution employed lost 56 per cent. of its proteolytic activity during exposure to the action of 0·4 per cent. sodium carbonate solution for one hour. In the presence of 1 per cent. of proteid it lost only 27 per cent., with 2 per cent. proteid only 13 per cent., and with 4 per cent. proteid only 7 per cent. Egg albumen had itself a marked antitryptic power and was therefore not employed for the above purpose. The protective value of the hydration products of proteids depended entirely upon their power of neutralising the sodium carbonate solution.

ANATOMY.

WEDNESDAY, JULY 27TH.

Professor A. THOMSON (Oxford), President of the section, occupied the chair and there was a very good attendance. After a few words of welcome from the President,

Dr. C. J. PATTEN (Sheffield) read a paper in which he suggested

A New Method of Mounting Anatomical Preparations for Museum and Dissecting-room Purposes.

He thought that the methods at present in vogue of mounting wet specimens were not wholly satisfactory and what was really wanted was a method of mounting in such a way that specimens could be readily removed from, and replaced in, the preserving fluid without the slightest detriment. To this end he suggested the following method. Four pieces of wood were taken and tacked together in the form of a frame which was then laid down on a perfectly clean sheet of plate-glass well oiled. Plaster-of-Paris, prepared by mixing 27 parts of the plaster with 22 parts of water, was then poured into the frame until the area inclosed by it was completely filled. A second sheet of plate-glass, well cleaned and oiled, was then quickly laid on the plaster. In a short time the glass was taken off and a slab of plaster-of-Paris, smooth and highly polished on both sides, could then be removed from the frame. The specimen to be mounted was placed on the slab and glass rods with pointed ends were employed to fix it and it was important that the rods should be fixed before the plaster had set quite hard. The specimen was then placed in an oblong museum jar and covered with a lid. Amongst the advantages resulting from the employment of this method Dr. Patten enumerated the following: (1) the specimen could be taken out and replaced at any time; (2) the specimen need not be handled; (3) the specimen was very suitably arranged for photographic purposes; and (4) it was easily re-tinted and re-lettered. He also thought that, in addition, the drawbacks of all methods of mounting wet specimens—viz., the discolouration of the preserving fluid and the collection of sediment—could be most easily overcome by his arrangement of an easily removeable lid which allowed of the entire vessel being periodically rinsed out. Such specimens always looked beautifully clean and bright.

The PRESIDENT showed in support of this method a frozen section which he had mounted some time ago on a slab of plaster-of-Paris. The great advantage was that the whole thing, specimen and slab, could be removed from the preserving fluid and that both sides of the section could be readily examined.

Dr. T. H. BRYCE (Glasgow) gave a lantern demonstration illustrating his researches on the

Histogenesis of the Blood in Larval Forms of Lepidosiren.

He showed that in the blood and tissues free white elements of various forms were found at an early period and he classified them in three groups: (1) the mononuclear leucocyte (leucoblast) which might be large or small; (2) the eosinophile leucocyte (erythroblast); and (3) the polymorphonuclear form, of variable size and either hyaline or granular. With regard to the origin of these elements, Dr. Bryce pointed out that larval forms of lepidosiren had no bone marrow and that the liver had no place in the formation of the blood. All the varieties arose *in situ* from mesenchymatous elements first in the splanchnic mesenchyme and afterwards in the mesenchymatous tissue around the pronephric duct and mesonephric tubules. In lepidosiren the thymus had no share in the first origin of the leucocytes. Before the thymus contained lymphoid elements the spleen assumed the function of forming leucocytes and this, again, was preceded in that function by the specialised tracts of mesenchymatous tissue referred to above. Dr. Bryce's specimens clearly showed that at a very early stage at a spot on the inner side of the mass of yelk cells, and long before there was any spleen or thymus, a mass of cells became marked off from the general mass. A little later, at a time which he called the "critical stage," the mass of cells was cut off from the yelk cells. They contained various forms of leucocytes and becoming converted into wandering cells eventually became the leucocytes. In his later slides Dr. Bryce showed the formation of the spleen and in the spaces of the organ young white and young red corpuscles, and lastly he showed the formation of the thymus in which only a few leucocytes seemed to be found.

Professor A. ROBINSON (London) asked for further information concerning the localisation of leucocyte formation and also for Dr. Bryce's differentiation of mesenchyme from mesoderm.

Professor F. KIEBEL (Freiburg), referring to his own work and that of his pupils, Professor Tonkoff of St. Petersburg and Dr. Piper of Berlin, said that in lower and higher vertebrates they had evidence of the origin of the blood from mesenchymatous structures and he was pleased that the interesting investigation of Dr. Bryce on lepidosiren on the same lines seemed to be confirmed. The question of the origin of leucocytes in the thymus he was now working at and, so far as he had gone, he could not come to a confirmation of Dr. Bryce's results. At the same time, seeing that his own investigations were unfinished, he preferred not to give any decided opinion.

In reply to Professor ROBINSON, Dr. BRYCE explained that the tracts in which the leucocytes were found developing were localised. The general mesenchymatous tissue did not show the same phenomena and in regard to his results, while they held good only for the form under study, they were to be considered as a contribution to the establishment of a general theory of the leucocytes.

Giants and Dwarfs.

The remaining part of the morning was devoted to a discussion on Giants and Dwarfs. This was introduced by Professor D. J. CUNNINGHAM (Edinburgh) who proceeded to give a most interesting account of the skeleton of the Irish giant Cornelius Magrath, which had been in the possession of Trinity College, Dublin, for close upon one and a half centuries. There was no museum specimen in Ireland better known or one which had created a wider interest. On account of his great height, references to Magrath were found in almost every work on anthropology in which the human stature was discussed. Yet his reputation in this respect rested upon an altogether fictitious basis, inasmuch as Magrath could not claim to first rank as a giant. Most contradictory statements had been made in regard to his height. Humphry gave 8 feet 6 inches, Sternberg 8 feet 5 inches, Wood 7 feet 9 inches, and Topinard 7 feet 4 inches. There was, however, only one record of measurement taken during Magrath's lifetime by a competent and trustworthy observer and this was in Florence. Professor Bianchi after a most careful series of measurements made him out to be 7 feet 5 inches. This did not quite correspond with the height of the skeleton in Dublin which was 7 feet 2½ inches, but the discrepancy could be explained by the facts that the skeleton was not well put together and that it had lost height in the process. Professor Cunningham then referred to the giants of history and reminded his hearers that the statements made in earlier records were altogether untrustworthy. No height, no matter how great or how ridiculous, was considered impossible. It might be said that the advertised heights of giants were nearly always too high and he was doubtful if there was any authentic record of a giant over 8 feet 2 inches or 8 feet 3 inches, though he did not regard this as the

limit of stature. He showed slides of Wehde, a giantess who was said to be 8 feet 4½ inches in height, and of Winkelmeyer, a giant who was said to be 8 feet 6½ inches, but Virchow, who measured the giant most carefully, found that he was 7 feet 5⅝ inches. Slides were next shown illustrating the osteology of Magrath, which indicated that he suffered from acromegaly in its most pronounced form. And nowadays the leading interest attached to giantism was to a large extent centred in the relation which it presented to that disease. That both giantism and acromegaly were morbid processes there could be no doubt, but the precise relation which existed between the two conditions was the subject of much discussion. More than 13 cases of giants who were acromegalic were now on record. The view held in most general favour at present regarded giantism and acromegaly as due to the same morbid process, the results differing merely according to the period of incidence of the disease. If the morbid process occurred in a child or young person before union of the epiphyses a giant resulted, whereas if it occurred in an adult after the period of general growth had stopped acromegaly resulted. Meige had pointed out that acromegaly never preceded giantism and that in 50 per cent. of giants acromegaly followed.

Professor B. C. A. WINDLE (Birmingham) said that dwarfishness might be produced by various causes, being pathological or teratological, and to make our present distinctions clear he suggested the following classification: pathological drawfs, rachitic (very rare), osteomalacic (very rare), cretinoid, and chondrodystrophic or achondroplasic. Many dwarfs undoubtedly belonged to the latter class and the condition was also met with amongst animals and could be perpetuated by breeding, as, for example, the dachshund and the Basset pig. Teratological dwarfs were phocomelic where parts of the limbs were absent, micromelic where limbs were complete but unduly small, and nanosomes (or true dwarfs) which might be primordial (sexual)—i.e., small men and women; or infantile (asexual)—i.e., permanent children.

Mr. HASTINGS GILFORD (Reading) regarded both dwarfism and giantism of marked degree as almost necessarily a sign of disease or malformation and such cases were, in reality, not in the domain of pure anatomy but belonged to pathology. He gave a most interesting demonstration of actual cases, illustrating the main types of dwarfs due to disease or malformation. In none of these could he trace the influence of syphilis, cretinism, congenital heart disease, or any other disorder. One was a species of infantilism, a defect not only of growth but also of development. This form of infantilism had been termed "ateleiosis," for those who were so affected seemed never to arrive at perfection. Another form of dwarfism exhibited characters of infantilism, premature old age or senilism, and abnormal development. In none of the conditions could the cause be determined. Mr. Gilford thought that there was reason to believe that the pituitary body was the seat of the disease and Dr. Woods Hutchinson had found actual disease of this body in one case, though it was apparently not of the same type as those to which he had referred.

Dr. G. A. GIBSON (Edinburgh) supported the previous speakers and said that he regarded giantism as bound up in some way with acromegaly. He showed skiagrams of a case of this disease beginning at 19 years of age and he thought that the pituitary body might be regarded as a regulator of growth in some way.

Professor A. F. DIXON (Dublin) brought out an interesting association between the pituitary body and the facial bones affected in acromegalic disease. As was well known the pituitary body developed partly from the neural tube and partly from the buccal cavity. When the body was diseased, as in acromegaly, there was a remarkable selection of the facial bones in such a way that those developed as membranous bones in connexion with the primitive mouth or stomodæum were the first to be affected or enlarged.

Dr. PETER THOMPSON (London) thought that there were cases of giantism not so clearly pathological as those in which acromegalic disease was undoubtedly present and he referred to certain examples of great stature in which the lower extremities only were involved, a condition which was probably due to delayed union of the epiphyses and diaphyses of the long bones.

Dr. GUSTAV MANN (Oxford) suggested that the condition of the sympathetic nervous system ought to be studied in connexion with abnormal growth, inasmuch as removal of the superior cervical ganglion in newly born animals produced overgrowth of the head and ears on the same side as that in which the ganglion had been removed.

Dr. R. GLADSTONE (London) agreed with this and suggested that the enlargement of the pituitary gland in acromegaly and some forms of giantism was possibly secondary to a primary affection of the sympathetic system, and might perhaps be compared with hypertrophy of the thyroid gland in exophthalmic goitre.

Professor ANDERSON agreed that the evidence went to show that many of the so-called giants and dwarfs were pathological and thought that the condition was associated with a transfer of ossific matter from one place to some other.

Dr. PATTEN in support of Dr. THOMPSON mentioned a skeleton which he had described of an adult in which the limb bones were very long and heavy but in which there were no signs of acromegaly.

Finally, Professor J. SYMINGTON (Belfast) agreed with the pathological view of giantism and said that there were very few authenticated examples of individuals who had deviated markedly from the common standard, either one way or the other, that were really healthy.

PATHOLOGY.

WEDNESDAY, JULY 27TH.

The proceedings of the section were opened by the PRESIDENT, Dr. JAMES RITCHIE, who took

Immunity

for the subject of his address with the object of presenting a general review of the position of our knowledge in this branch of experimental research, pointing out that a general consideration of ascertained facts was rendered necessary owing to the divergent character of the studies, ranging from physical chemistry to hæmatology, now being prosecuted by different workers in the attempt to elucidate the problems involved. After paying an appreciative tribute to the genius of Ehrlich, whose theories of immunity, though promulgated some six years ago, still dominated the whole situation, Dr. Ritchie stated the main points for consideration as: (1) the natural immunity observed in certain circumstances to exist towards disease; (2) the artificially acquired immunity which came about in disease contracted under what might be called natural conditions of infection; and (3) the relation of those conditions to recovery in any case of infectious disease. The solid basis of facts already arrived at regarding the process of immunisation was briefly summed up. Certain of the effects of some bacteria, and most of the effects of other bacteria, could be traced to extremely soluble poisons of unknown composition and which frequently possessed a selective action on special tissues and when injected into the body of a susceptible animal rapidly disappeared from the circulatory fluids, probably in consequence of their fixation in susceptible cells to which they sometimes travelled by special paths. By methods of immunisation an almost limitless degree of immunity could be developed in a sensitive animal, associated with the appearance in the serum of that animal of a "specific" substance capable of neutralising that toxin which stimulated its genesis. Further, that the neutralisation of toxin by antitoxin was of the nature of a chemical union but that such union was dissociable. The elaboration of soluble toxin was not, however, a universal characteristic of bacteria and in the case of most it was necessary, not only to neutralise poisons, but also to destroy the bacteria themselves if the animal body was to escape destruction. So far as concerned highly immunised animals it might be stated that the destruction of the bacteria was associated with the presence in the serum of the immune animal of two substances—a thermo-labile "complement" normally occurring in the animal species involved and a thermo-stable "immune body," specific in character and probably entirely absent in normal serum and which would act deleteriously only on the protoplasm which stimulated its formation. The reactions of these two substances on one another and on the bacteria to be destroyed were of a chemical nature and analogous to the interaction of toxin and antitoxin. The view that these bodies did not exist apart from cells *in vivo*, and the results of Walker, which strongly point to the leucocytes as the source of the complement, also the contention as to coincident and co-related cytolysis associated with extra-cellular destruction of bacteria, were commented upon. Contrasting the infective with the toxin-producing bacteria

it was pointed out that though we were practically certain that the presence of toxin in the animal body stimulated the production of atitoxin we did not know what portion of bacterial protoplasm stimulated the production of bactericidal substances. Dr. Ritchie, still speaking of the infective bacteria, remarked on the inadequate importance attaching to the metabolic aspects of the accompanying fever as compared with those dealing with the disturbances of heat regulation and suggested that part of the increased metabolism associated with infective fever might be the expression of work done by cells actively engaged in operating on the invading bacteria. Next the part played by persons in the production of the general effects caused by different infective bacteria was considered and it was pointed out that these poisons were for the most part intracellular and were probably derived from the breaking up of bacterial protoplasm which followed on death both in cultures and in the living animal and were responsible for what might be termed the non-specific effects of infective bacteria. Mention was made of the experiments of Pfeiffer and Kolle supporting the thesis that in the case of the infective bacteria the intracellular toxins which produced the pathogenic effects were not concerned in the production of the immunity which could be developed against these bacteria, for by appropriate dosage an immune animal could be made to exhibit the capacity of killing all the bacteria injected into it, and yet then succumb to the effects of the toxins which the death of the bacteria liberated from the bacterial protoplasm. After briefly commenting on the chemical reactions of toxin and antitoxin and contrasting the views of Ehrlich in explanation of the associated phenomena with those put forward by Arrhenius and Madsen, reference was made to what might be justly considered the three most important pieces of work bearing on immunity during the last year or so. First, that by Meyer and Ransome which established the fact that tetanus toxin reached the nerve cells by the path of the motor axones only, while their further observations went to show that antitoxin was conveyed to the nerve cells by the much slower route of the lymphatics, thus explaining the experimental fact that the injection of a very large excess of antitoxin would not protect an animal against the subsequent introduction of even a small amount of tetanus toxin into a motor nerve—observations which if confirmed destroyed the theory put forward by Ehrlich that antitoxin was formed in the nerve cells. Next, the work of Muir on the interaction of the constituents of hæmolytic sera which went to prove that when corpuscles were thoroughly saturated with immune body it was possible to dissociate a certain amount of immune body and cause it to become attached to fresh corpuscles, and further, that when red blood corpuscles were saturated with both immune body and with complement still some of the immune body but none of the complement could be dissociated from the combination—observations incompatible with the view that immune body formed a link between corpuscles and complement. Finally, the work of Wright and Douglas, which consisted in the elaboration of methods of precision which had enabled them to study the laws which govern the phenomenon of phagocytosis and to demonstrate the presence in the serum of a substance they termed "opsonin," whose function it was to unite with the bacteria, and by a process of sensitisation render them capable of ingestion by the phagocytes.

Dr. W. BULLOCH (London) was then called upon to read his paper on

The Cellular Aspects of Immunity.

Commencing with a chronological and historical review of the facts and theories dealing with the relationship of the body cells and fluids to the immunity problem, founded on a study of the original papers, Dr. Bulloch contrasted the sequence of the humoral and cellular theories of disease with a like sequence of theories as applied to immunity. He drew attention to the exhaustion theory of Pasteur which, based on observations of flask cultivations of the bacillus of fowl cholera, was insufficient to explain the process of immunisation as observed in the living animal, as it failed to account for the facts that immunity could be produced by means of the soluble products of bacteria and that the tissues of immune animals were well adapted as media for the growth of micro-organisms, although the possibility of certain forms of natural immunity owing their existence to absence of suitable nutritive pabulum was deserving of consideration in the light of Ehrlich's analogous suggestion of the absence of suitable receptors. Chauveau's retention theory, briefly discussed, was followed by a *résumé* of the zoological observations extending over many years, concerning the means employed by the infected host to resist microbial infection upon which Metchinkoff subsequently founded his phagocytic theory of immunity which might be briefly stated as the destruction of the virus in the interior of certain mesodermic cells by a process of digestion. In the meantime the humoral theory propounded by Buchner, based on the observations that the destruction of bacteria took place in cell-free serum *in vitro*, owing to the action of certain substances which he termed alexins, and that the bactericidal properties of the serum could be inhibited by heating to 56° C., found many supporters. The proposition that these alexins were derived from leucocytes led to researches that culminated in the partial fusion of the rival cellular and humoral theories, although the discovery of antitoxins at about this time raised the question of the site and mode of manufacture of anti-bodies. Denys and Havet showed by filtering dog's blood through paper that the serum was less bactericidal for bacillus coli than the blood and concluded that the leucocytes which were held back in the process of filtration were concerned in the formation of alexin, altho ugh they stated that cells and serum acted together in a manner varying with the species of animal and the nature of the virus. From this time on much research had been devoted to the question of the origin of the alexin and the question had been complicated by the fact that Buchner's alexin comprised two bodies—a complement (alexin proper) and an immune body. Metchnikoff considered that both these bodies were contained in certain phagocytic cells, the macrophages, and affirmed that plasma was alexin-free and contended that the alexic action was of the nature of a digestive process—a contention entirely negatived by the experiments of Grüber and others. Many observations were undertaken with a view to extracting alexin from the leucocytes but without success, although Dr. Bulloch by simultaneously measuring the amount of hæmolytic constituents on the one hand and the mono- and poly-nuclear leucocytes on the other, found that the appearance of the hæmolytic immune body in the serum was coincident with a rise in the number of mononuclear leucocytes, while by producing an artificial polynuclear pseudo-eosinophilia there was a coincident rise in the amount of complement. In the case of immune sera Pfeiffer, Wassermann, and others found that the main factory of anti-bodies was situated in the spleen, bone marrow, and lymph glands. From the mass of conflicting detail Dr. Bulloch concluded that the existence of alexins was undoubted but nothing certain was known of their origin; their existence in plasma was not definitely settled but the balance of opinion was in favour of their occurrence outside the cells; it was improbable that they acted like digestive ferments. Although highly probable, it was not proved that leucocytes secreted alexin, the diversity of opinion and the uncertainty being due to the complexity of the subject and defects in technique. Wright and others had shown that serum, whether normal or immune, was not bactericidal for the staphylococcus, using the term in its strict sense, and Dr. Bulloch had demonstrated the same fact with regard to the bacillus pyocyaneus; and in considering the conflicting claims of serum and cells in this connexion it must be questioned whether immunity was necessarily always antitoxic or bactericidal. The work of Wright and Douglas had shown that in phagocytosis a cardinal rôle was played by thermolabile substances, termed opsonins, present in the serum which had nothing in common with Buchner's alexins, and that during the process of active immunisation the opsonic value of the serum was definitely increased. Dr. Bulloch working with Mr. E. E. Aitken had confirmed the observations of Wright and Douglas on opsonic immunity and had found that the amount of opsonins in the serum could not be increased indefinitely as the result of inoculation, although opsonin was somewhat analogous to agglutinin. Further, serum contained a number of opsonins, each specific for given bacteria, and which could be removed in succession by saturation—results in harmony with the pleurimistic doctrines of Ehrlich. Thus, in addition to antitoxic and bactericidal immunity, there also existed opsonic immunity—a phenomenon corresponding largely to the phagocytosis of Metchnikoff.

Dr. GEORGES DREYER (Copenhagen) then read a paper by himself and Dr. A. J. JEX-BLAKE (Oxford) on

Agglutinins in Relation to Immunity.

The previous work of Nicolle and Joos was briefly reviewed

and the generally accepted explanation of this phenomenon was stated as the combination of agglutinable substance contained within the bacteria themselves with agglutinin present in the serum, which combination, however, did not take place except in the presence of a salt. The influence of Ehrlich's side-chain theory upon the hypothesis put forward to explain the mode of action of the specific agglutinins was next considered and the work of Eisenberg and Volk referred to. These authors described the agglutinins as being composed of a specific, labile, precipitating group and a more stable combining group; in the same way the bacteria were described as containing a labile agglutinophoric group and a stable haptophoric group; they further explained the formation of agglutinoids, comparable to toxoids, by the influence of heat, acids, &c., upon the agglutinins, and stated that these agglutinoids possessed so great an affinity for the bacterial agglutinable substance as to be able to prevent agglutination—in the presence of unchanged agglutinin even—by combining with the bacterial haptophores. Dr. Dreyer and Dr. Jex-Blake carried out a series of observations by testing from 22 to 24 hour-old broth cultures of bacillus coli, or cultures of similar age, on agar, emulsified in 0·85 per cent. salt solution made up to an arbitrarily chosen standard of opacity, against the agglutinating immune sera of rabbits and goats previously immunised against bacillus coli and other agglutinants. The experiments were carried out by placing 1·5 cubic centimetres of bacterial emulsion or bouillon culture of bacillus coli in each of 24 small test tubes, adding a quantity of agglutinant to each of tubes 1 to 23, gradually diminishing so that tube 1 contained 100 times as much as tube 23 and making the contents of each tube up to 2·5 cubic centimetres. Tube 24, containing only bacteria and salt solution, served as a control. The tubes were well shaken, then heated in a water bath at 37° C. for from one and a half to two hours, then the amount of agglutination was measured, the measurements being repeated after further 18 hours at room temperature when necessary. The measurements were made partly by Madsen's method—i.e., selecting as a standard a moderately agglutinated tube and comparing it with tubes of other series—and partly by determining the tube showing the minimum agglutination visible to the naked eye in each series. The results yielded by the two methods did not always agree and discrepancies were particularly noted in cases where the serum had been first treated by heat or chemical reagents, from which Dr. Dreyer and Dr. Jex-Blake argued that the reaction velocity of the chemical or physical processes resulting in the agglutination of bacteria was a very variable factor. The age of agar cultures had little influence upon the agglutinability of the bacteria, but broth cultures showed diminished agglutinability with increasing age, due to the presence of toxins which combined with the agglutinin and were precipitated by excess of it. Eisenberg and Volk in investigating compounds formed by bacteria and agglutinins, found that the absolute absorption of agglutinin by a constant quantity of bacteria increased with increasing quantities of agglutinin; while the coefficient of absorption—e.g., the ratio of agglutinin absorbed by bacteria to agglutinin originally present—fell. Dr. Dreyer and Dr. Jex-Blake found, using the filtrate of a 19-day broth culture of bacillus coli, that with increasing amounts of agglutinin its absolute absorption by the bacterial products increased, but that the absorption coefficient remained the same. When investigating the action of heat on the agglutinability of bacteria they noted that heating up to 60° C. scarcely altered the agglutinability of coli emulsion, but heating to 70° C. and upwards considerably diminished it, the diminution, however, being less marked with old cultures, and instanced a 24-hour-old culture requiring 35 times as much agglutinin after heating to 100° C. to produce a similar result as was needed by the unheated culture, but with a 50-day-old heated culture only 3·6 times as much agglutinin was needed as by the unheated emulsion. The suggestion that the heating destroys the agglutinable substance of the bacteria was denied by Dr. Dreyer and Dr. Jex-Blake for their experiments showed that prolonged—from two to 13 hours—heating of the emulsion at 100° C. partially, or even entirely, restored its agglutinability, a phenomenon which they explained by assuming that the agglutinin-fixing body, which was dissolved out into the fluid during the early stages of the heating, was destroyed by prolongation of the heating process. They also suggested that change in bacterial surface tension might be involved. In a similar way Dr. Dreyer's experiments showed that megatheriolysin heated to 60° C. for 30 minutes had no effect on goat's blood but after heating to 100° C. for ten minutes two and a half volumes would produce a similar amount of hæmolysis as one volume of the unheated lysin, whilst the identity of the hæmolytic reaction in the two cases was proved by the inhibition of the phenomena by the addition of antimegatheriolysin. In discussing the influence of heat on agglutinin itself Dr. Dreyer and Dr. Jex-Blake showed that when immune serum was heated for half an hour at 65° C. half the agglutinating power appeared to be lost if the preparations were examined at the end of two hours at 37° C., but when examined after a further period of 18 hours at room temperature the destruction of agglutinin was seen to be *nil;* and, further, that the greater the dilution at which the serum was heated the greater was the apparent destruction of agglutinin, from which they argued that the "zone of inhibition"—i.e., the production of more marked agglutination when the serum was present in small quantities than when present in large quantities—was not a consequence of the conversion of agglutinin into agglutinoid as maintained by Eisenberg and Volk, but that the phenomenon might be explained, partly at any rate, by a slowing of the velocity of the agglutination reaction. The agglutination of bacillus coli and bacillus typhosus by acids was then briefly described and its peculiarities were noted. The reaction was indistinguishable both naked eye and microscopically from that produced by specific immune sera; emulsions of bacillus coli in normal saline or in sterile broth were readily agglutinated by hydrochloric acid—broth cultivations with difficulty. The most characteristic feature of the phenomenon was that it was produced either by relatively large or by relatively small amounts of acid but not by the intermediate amounts. The degree of opalescence of the emulsion was also an important factor, the intermediate zone of inhibition diminishing with increasing density of emulsion. The addition of free acid to bacterial emulsion profoundly altered its serum agglutinability—the presence of 0·06 milligramme of hydrochloric acid reducing it to one-half, or of 0·24 milligramme of acid to one-thirty-third, although each of these quantities of acid acting alone would produce marked agglutination. Caustic alkalies did not agglutinate bacterial emulsions but rendered it less agglutinable. Acting upon immune sera an alkali was more destructive than an acid, though in each case the destruction of agglutinin was less than it appeared, as could be proved by suitable neutralisation.

Dr. THOROLD MADSEN (Copenhagen) then gave his paper on

The Neutralisation of Lysins,

in which he first described and demonstrated Ehrlich's conception of diphtheria toxin as composed of a series of bodies—proto-toxin, deutero-toxin, trito-toxin, and toxin, differing in toxicity and also in avidity for the antitoxin, by graphic methods with the aid of the familiar "spectrum" and "stair-step" curve, basing his remarks on the concrete example of the complete neutralisation of 100 toxic units *in vitro* by a quantity of antitoxin to which the numerical value of 100 had been assigned and showing how this theory of the composition of the toxin was supported by the results of partial saturation experiments. Passing on to his own experiments on tetanolysin (the hæmolytic substance of tetano-toxin) it was shown that almost identical phenomena could be demonstrated by similar means but that if the antilysin was added in very small increments to the tetanolysin the neutralisation could be represented by a regular curve showing no trace of the stair steps which indicate the different components of the toxin. Contrasting the results thus obtained with those observed during the neutralisation of a strong base by a strong acid on the one hand and of a weak base by a weak acid on the other, the similarity of the hyperbolic curves produced during the neutralisation of tetanolysin by antitetanolysin and of ammonia by boric acid was noted, and it was found that the necessary data could be calculated in a corresponding manner by the use of formulæ deduced from the *law of mass action* (of Guldberg-Waage): the formula for toxin-antitoxin combinations being expressed as

$$\frac{\text{Free toxin.}}{\text{vol.}} \times \frac{\text{Free antitoxin}}{\text{vol.}} = K \frac{(\text{Toxin-antitoxin})^2}{\text{vol.}}$$

where K is the constant of dissociation, and indicating that

one molecule of antitoxin combines with a constant amount of antitoxin (perhaps one molecule) to form two molecules of one or more combinations of toxin-antitoxin. This application of the established laws of physical chemistry to toxin-antitoxin combinations and their subsequent partial dissociation explained the long zone of neutralisation—the continued addition of antitoxin causing continued diminution but never absolute disappearance of the amount of free toxin. Dr. Madsen then detailed his observations on diphtheria toxin which showed after the perfection of his methods a perfectly satisfactory correspondence between calculated and observed values and yielded regular curves without any indication of the presence of prototoxoid, and the deduction from these observations was that there was no reason to consider the diphtheria toxin as so highly complex a body as Ehrlich described. In this connexion Dr. Madsen commented on the varying values of the dissociation constants, from the small diphtheria constant to the highly dissociated curve of the tetano-lysin constant. Dr. Madsen, in association with Walbum, carried out similar observations upon several other bodies—ricin, rennet, vibriolysin, staphylolysin, and streptolysin, and their anti-bodies—and obtained similar curves and a similar close agreement between observed and calculated values for the various combination, while Dr. Madsen, together with Dr. Noguchi, obtained identical results with cobra, crotalus, and mocassin venom in combination with their respective antivenins. Dr. Madsen then proceeded to discuss his observations in association with Noguchi and Walbum on the hæmolytic action of acids and alkalies, vibrio lysin, streptolysin, ox-blood hæmolysin, the agglutinating power of ricin, and mercuric chloride upon erythrocytes, typhoid and coli agglutinins, the precipitating action of egg albumin precipitin, &c., with regard to the rates of reaction and the relations to temperature, and showed that the formula $\frac{C^1}{C^2} = E^{\frac{M}{R}\frac{(T_1 - T_2)}{(T_1 - T_2)}}$ held good, when C_1 and C_2 are the concentrations at the temperatures T_1 and T_2, E, the base for the natural logarithms, $\frac{M}{R}$ a constant and T_1 and T_2 the absolute temperatures. Dr. Madsen concluded his remarks by pointing out the application of the law of monomolecular reactions (cf. sugar inversion) to the attenuation of poisons by heat by means of the formula $\frac{dx}{dt} = K(A - x)$, where $A - x$ is the concentration of the toxin at the time t, K is a constant and A the concentration at the beginning of the experiment.

Professor S. H. C. MARTIN (London) next read his paper on

Snake Venom in Relation to Immunity.

Having remarked upon the extreme potency of some snake venoms—0·000025 gramme per kilogramme causing death in the rabbit—the author pointed out that so far all attempts to separate the toxic principle from the modified proteid in which it existed had been unsuccessful and at present the toxic principle must be regarded as a special grouping of a portion of the atoms in the complex venom proteid molecule, although the suggestion was put forward that it might be a side chain and might ultimately be capable of differentiation. Venoms were shown to be highly complex in composition when examined by biological methods, many containing one or more but not all of the following: fibrin ferment, proteolytic ferment; neurotoxin, with special affinity for the respiration centre; neurotoxin with special affinity for muscle nerve endings; various cytolysins; anti-bactericidal body; agglutinin for red blood cells, &c., and the rapidly fatal action of some venoms was due to the neurotoxin causing respiratory paralysis, while others by their fibrin ferment produced intravascular clotting. Years ago Professor Martin expressed a belief in the unity of constituents having similar physiological action although derived from different snakes. More recent observations, however, on the differentiation of these bodies by means of their combining reactions with various antisera led him to the conclusion that although there might be similarity of the toxophoric groups of these various bodies their haptophoric groups were dissimilar. The chief interest of the snake venoms, however, lay in the analogy existing between them and the toxins elaborated by some bacteria and the important part played by experiments on snake venom in the development of our knowledge of immunity. Early experiments in the preparation of therapeutic antiserum led Calmette to maintain that such were not specific but this view had not been supported by the observations of Professor Martin and others and Calmette had recently admitted the existence of neurotoxin and hæmorrhagin, and further that the antitoxic serum obtained as the result of injecting cobra venom was without action on hæmorrhagin, but that employing cobra venom and viper venom a polyvalent serum could be prepared. Professor Martin was unable to confirm this statement nor was it supported by the observations of Tidswell on the venom of Australian snakes. These observations and those of Lamb, Rogers, and others, showed that the various sera were highly but not absolutely specific and that neutralisation might sometimes be accomplished by means of greatly increased quantities of heterogeneous serum. The advantages of venoms over bacterial toxin in experimental work upon immunity being greater stability when in the dry state and also in solution, the fact that they withstand heating to 70°C. or even boiling without being destroyed and, finally, their hæmolytic properties which, permitting test-tube experiments, made for greater accuracy and precision. After briefly summarising the work of early observers on the antagonism between toxins and antitoxins, the work of Fraser on cobra venom and antivenene was quoted in support of the hypothesis that this antagonism was of the nature of a chemical reaction. Professor Martin then referred to experiments carried out in association with Cherry in which filtration through a porcelain filter candle choked with gelatin was employed to separate toxin from antitoxin, the larger size of the molecule of antitoxin preventing its passage through the filter, by which it was shown that some chemical relationship between toxin and antitoxin was apparent after the mixture had stood for half an hour, because the filtrates obtained from these mixtures were harmless to guinea-pigs, and the great molecular size and complexity of the toxin and antitoxin was held to explain the high velocity coefficient of the reactions involved. Repeating some experiments by Fraser Professor Martin had found that when simultaneously injecting venom and a neutralising dose of its antitoxin subcutaneously in different parts of the body 20 times greater dose of antitoxin was needed than when the venom was introduced subcutaneously and the antitoxin intravenously, pointing to the probability of the more rapid absorption and fixation by the cells of the toxin.

A further contribution to the study of this branch of immunity was then made by Dr. NOGUCHI who presented the result of his

Therapeutic Experiments with Anti-crotalus and Anti-mocassin Sera.

After referring to the specificity of anti-sera prepared for the venoms of the crotalus, mocassin, and cobra Dr. Noguchi showed that a given dose of anti-cobra serum protected against five minimal lethal doses of cobra venom, when tested on the guinea-pig, only one of water-mocassin venom, and was quite ineffective against crotalus venom; and, further, that a given quantity of anti-cobra serum neutralised two minimal hæmolytic doses of cobra hæmolysin *in vitro*, but had no anti-hæmolytic action against crotalus or mocassin hæmolysin and so on through the remainder of the cross actions; and, further, that there was no constant relation between antitoxic and anti-hæmolytic values of an antivenene; hence the standardisation of antitoxic power of a serum could be made by simple hæmolytic tests in vitro. Turning then to the subject proper of the paper, experiments were quoted to show that two minimal lethal doses of a crotalus venom injected intraperitoneally killed a guinea-pig four to five hours later, and of a mocassin venom three and a half to five hours, the symptoms being similar in each case. Series of guinea-pigs were taken, each injected with two minimal lethal doses of crotalus venom, and at intervals of an hour different animals were treated with various doses of anti-crotalus serum. It was then found that it was possible to save the animal even at the most critical stages of intoxication so long as the experimental animal was able to stand. Similar results were obtained with anti-mocassin serum. The results were well shown in a table, from which the following is taken, and demonstrated conclusively the high therapeutic value of these two antivenenes.

Anti-crotalus serum. Time.	Anti-crotalus serum. Dose.	Crotalus venom (2 m.l.d.).	Anti-mocassin serum. Time.	Anti-mocassin serum. Dose.	Water-mocassin venom. (2 m.l.d.)
Control.		Death, averge time 4 hours 25 minutes.	Control.		Average time—fours hours 21 minutes.
1 hour	1 c.c.	Recovered.	1 hour	1 c.c.	Death delayed to ten hours.
2 hours	1 c.c.	Death delayed to six hours.		2 c.c.	Recovered.
	2 c.c.	Recovered.	2 hours	2 c.c.	Death delayed to 3½ hours.
hours	1 c.c.	Death delayed to five hours.		4 c.c.	Recovered.
	4 c.c.	Recovered.	3 hours	4 c.c.	Death delayed to four hours.
4 hours	4 c.c.	Death delayed to nine hours.		8 c.c.	Recovered.
	8 c.c.	Recovered.	4 hours	10 c.c.	Recovered.

From the result of his experiments the author concluded that the action of antivenenes was highly, if not strictly, specific both in vivo and in vitro, and that only the specific antivenene must be used in snake poisoning; that the relation between antihæmolytic and antitoxic powers of an antivenene was variable, and that the estimation of one constituent gave no indication of the strength of the other.

Dr. M. A. RUFFER (Alexandria) then gave his paper on

Hæmolytic and Hæmosozic Sera,

detailing experiments carried out in conjunction with Dr. Crendiropoulo on the effects produced on the blood by the injection of urine and bile. The word hæmosozin, it was explained, was coined to obviate the use of the term antihæmolysin, while the term lysogen was employed by the author to denote any substance which when injected into the animal body gave rise to the production of a hæmolytic serum. Fresh urine of man and of animals injected into rabbits stimulated the production, well within a week, of a specific hæmolysin. The lysogen of urine, which could also be demonstrated in some pathological albuminous urines, was unaltered by a temperature of 96° C. for 30 minutes, but was completely inactivated by 120° C. for a similar time; it did not dialyse readily and was destroyed by digestion with mineral acids (5 per cent. hydrochloric acid) and by long contact with alcohol. Lysogen was precipitated by alcohol and by ammonium sulphate and was probably not one of the substances hitherto isolated by chemists from urine. Miss Amos had shown that neither kreatin, kreatinin, urea, uric acid, xanthin, &c., were lysogenetic. Normal urine also contained a hæmosozin, which was diminished in quantity when the urine was heated to 100° C. and was destroyed by exposure to 120° C. for 30 minutes. The similarity of the reactions of these two substances should not be taken as proof of identity, for lysogen was specific, hæmosozin was not, and would neutralise the hæmolysin of any serum. Experiments carried out with bile showed that the hæmolysis produced in vitro could not be attributed to bile salts only, for after dialysis the salt-free bile was still hæmolytic. On the other hand, the ethereal extract of bile was hæmosozic, and so was normal serum when tested against bile of an animal of the same species. Hæmosozic sera produced by the injection of bile neutralised completely the hæmolysins present in the serum of animals injected with urine.

The section was then adjourned till 2.45 P.M. On resuming the sitting in the afternoon

Professor ROBERT MUIR (Glasgow) followed with a paper on

Hæmolytic Sera in Relation to Immunity,

in which his remarks were limited to a discussion of three questions. First, the nature of the combination of anti-substances; next, the constitution and mode of action of complements; and lastly, the combining relationships of receptor, immune body, and complement. In considering the saturation phenomena of immune body and red corpuscles its similarity to the process of neutralisation of toxin by antitoxin was remarked, and it was pointed out that the amount of immune body which enters into combination was not a fixed quantity but varied with the amount of immune body present and that the reaction was, in fact, an example of mass action; similarly the combination of complement and anti-complement followed the same physical laws and in both cases the combination was a reversible process. With regard to the second question, the researches of the author confirmed Ehrlich's views, and it might be accepted that complement is analogous to toxin and like it possessed two chief atom groups—a combining or haptophore group and a toxic or zymotoxic group; and the opinion was expressed that the combination of complement with red corpuscles treated with immune body was a very firm ona end that the saturation phenomena observed might be due in part to the presence of "complementoids" analogous to "toxoids." Further, the author admitted the probability of the multiplicity of complements and agreed with Ehrlich that more than one complement might be present in a given serum. On the other hand, he did not agree that an immune body might have several complementophile groups and might so take up several different complements. The zymotoxic group was much more labile than the haptophore group and might be destroyed by heat while the latter persisted, the resulting body being a complementoid which injected into an animal of a different species from that supplying the serum stimulated the production of anticomplement. Intact corpuscles even when treated with immune body were almost impervious to complementoid, but when the toxic action of complement had occurred complementoid readily entered into combination. Turning to the question of variations of toxic activity as contrasted with the combining affinities, experiments were quoted which led to the important conclusion that the therapeutical efficiency of a bactericidal serum depended not only on the ready combination of the compliment concerned through the medium of the immune body, but the bacterium would be sensitive to the action of the toxophore group of the complement. Referring to the combining affinities of receptor, immune body, and complement, it was pointed out that Bodet's theory that the immune body rendered the living cell sensitive to the action of complement was insufficient to explain the observed phenomena, although from the fact that neither receptor nor immune body was capable of taking up complement when separate but did so when combined, one of the first two sensitised the other to the combining affinity of complement, still the process was undoubtedly a chemical combination of these three different molecules. The author concluded by referring to some of his experiments which showed that from a combination of receptor and immune body fully saturated with complement (the excess being afterwards removed) immune body could still be dissociated and that it came off as immune body alone—a phenomenon which it was impossible to explain on the supposition that immune body was a link between the receptor and complement molecules.

Dr. A. E. WRIGHT (London) then discussed

Opsonins and their Relation to Immunity.

Prefacing his remarks by a short historical survey of theories of immunity, Dr. Wright deplored the existence of an incurable disease prevalent among scientific workers and characterised by the building up of complete pictures of processes under observation from inadequate facts eked out by vivid imaginations. Passing on to the results of a study of the changes induced in the blood by the inoculation of typhoid vaccine, he referred to the preliminary negative phase characterised by loss of bactericidal power, followed by a positive phase in which bactericidal power was increased, and quoted experiments which clearly showed that after inoculation with small doses the negative phase was slightly and the positive phase well marked, but the reverse was noted after inoculation with large doses. The speaker, in association with Captain S. R. Douglas, I.M.S., had investigated the phenomena grouped under the name of phagocytosis by improved methods which they had devised for the purposes, which, moreover, enabled them to manipulate cells of the blood quite apart from the serum. One of the first results of this work was to show that any alteration in the way of increase of phagocytic power following inoculation with vaccines was due to alterations in the serum not in the cell itself. In particular, one set of experiments quoted brought out the point very clearly. When the phagocytic index was calculated by the methods described, and assuming A to be an individual treated with, say, staphylococcus vaccine, then (1) A's white blood cells three volumes + A's serum three volumes + staphylococcus emulsion one volume gave phagocytic index of 25·7; (2) control white blood cells three volumes + control serum three volumes + staphylococcus emulsion one volume gave phagocytic index of 13; (3) A's white blood cells two volumes + control serum three volumes + staphylococcus emulsion one volume gave phagocytic index of 13; and

(4) control white blood cells three volumes + A's serum three volumes + staphylococcus emulsion one volume gave phagocytic index of 28·2. Further experiments showed that these results were due to the presence in A's serum of a substance which by its action on the bacteria rendered them an easy prey to the phagocytes and to this substance the name opsonin had been applied.

The meeting then adjourned at 4.30 P.M. and at 4.45 P.M. Lantern Demonstrations on Colour Photography were given by Mr. SANGER SHEPHERD (London) and Mr. J. HALL-EDWARDS (Birmingham) respectively.

OPHTHALMOLOGY.

WEDNESDAY, JULY 27TH.

This section met under the presidency of Mr. R. W. DOYNE (Oxford).

The PRESIDENT bade a welcome to the number of ophthalmologists from the United Kingdom, from outlying parts of the empire, from America, France, and Germany, who had signified their intention, in an extensive list of contributions set down for discussion, of aiding the advance of their science and art. He felt the intention already realised in part by the largeness of the gathering before him.

The PRESIDENT then called upon Mr. R. MARCUS GUNN (London) to open the discussion on

Retro-ocular Neuritis.

Mr. Gunn said that he should include in this category all cases which showed evidence of the optic nerve being impaired by an inflammatory affection behind the papilla. The evidence was mainly clinical and the diagnosis, for a time, might rest solely on the subjective symptoms. But ophthalmoscopic changes came to their aid, either early in the affection by the neuritis invading the papilla or after the lapse of some weeks by the optic disc becoming pale. In exceptional cases only did opportunities occur of examining the affected nerve and then nearly always long after the inflammatory stage had passed away. Put very broadly, he would include all cases in which there was evidence of the optic nerve being inflamed, apart from such as were generally recognised as papillitis. But they were confronted by two questions: (1) How were they to recognise a neuritis when the papilla presented a normal aspect? (2) How were they to differentiate between retro-ocular neuritis involving the papilla and a pure papillitis occurring without evidence of intracranial or other disease calculated to produce it? The reply must be that they were now dealing with a well-recognised clinical group of cases, associated with certain definite subjective symptoms—namely, rapid failure of vision, particularly affecting the macular area, often in one eye only, usually accompanied by pain and tenderness in the orbit. Other characters were impaired pupil reaction to light, an absence of early ophthalmoscopic changes, and a tendency to recovery. Slighter or anomalous forms might occur without these symptoms or conditions as an early descending optic neuritis, from an anterior basal meningitis, would in its earlier course simulate a retro-ocular neuritis. Very similar symptoms occurred in central retinal affections and the differential diagnosis was often difficult during the early stages; the prominent symptom was central visual failure in one eye and at first there were no definite ophthalmoscopic changes. The chief distinguishing feature in the retinal cases was the absence of associated pain; there was also sometimes micropsia, or a positive scotoma, with a history of recent exposure to excessive light. They did not usually get the late pallor of the optic disc, but frequently found œdema and round, pale, yellow spots in the macular region. In the early stages, so long as the diagnosis rested merely on subjective symptoms, retro-ocular neuritis was liable to be confused with functional amblyopia, but a careful examination of the character of the reaction of the pupil to light should always serve to distinguish between them. The reaction was invariably impaired when there was decided amblyopia from neuritis, while it remained normal in cases of functional origin. The amount of amblyopia varied greatly. There might be absolute blindness for a time in the most severe form. On the other hand, occasionally complaint was made of recent visual failure, even though the acuity was $\frac{6}{6}$. In slight cases the test-letters were read slowly, as there seemed to be a mist obscuring their outline; this was particularly evident on comparison with the other eye, for these slight forms were practically always uniocular. A relative colour scotoma at or near the fixation point could always be found in these mild cases. Visual acuity in retro-ocular neuritis was worse in a very bright light and excessive light led to further temporary deterioration, probably from the physiological degeneration so induced in the ill-nourished axis cylinders. Occasionally complaint was made of seeing objects as through a moving haze like that seen on a sunny day near the ground; this might possibly be explained by imperfect insulation of the axis cylinders, from breaking down of their medullary sheaths, a change which was known to occur early in retro-ocular neuritis. Besides loss of visual acuity there was a marked diminution in the light sense. A feature of retro-ocular neuritis was the rapidity of the visual failure; this was in contrast with the length of time that a papillitis might exist without the nerve function being affected, and with the usually gradual failure when it did occur in the latter. The visual failure in retro-ocular neuritis very frequently took the form of an absolute central scotoma, surrounded by an area in which the colours red and green were recognised imperfectly or not at all. This visual loss was due undoubtedly to interference with the conducting efficiency of the macular fibres, which from their predominance, both in size and action, and probably by reason of their nourishment by peripheral blood-vessels (Silcox) were liable to degenerations not so easily affecting the general mass of the optic nerve fibres. Pain was a feature of the condition; it was marked in one-third of the cases collected. It was either referred to the back of the eyeball or was elicited on pressing the globe backwards. It sometimes preceded alterations in visual acuity. Lastly, there was much more tendency to recovery, even in severe forms of retro-ocular neuritis, than would be expected, judging from experience of other optic nerve lesions. At the same time there were exceptional cases in which no recovery took place, and others where there was a liability to recurrence so that ultimately the visual result was disappointing. On such important points of etiology as the relation of age and sex to the disorder he had made careful examination in the 350 cases which he had collected. Etiology was varied and often obscure. Toxic amblyopias proper, as from tobacco, he excluded from the group under review. In one class he included inflammation communicated to the nerve from neighbouring structures. Cellulitis or periostitis in the orbit accounted for 40 cases; exposure to cold for 27; inflammation secondary to dental abscesses for 17; and sphenoidal sinus disease for 18. In a second class he put local manifestations of general disease; syphilitic disease (gumma), 16; and insular sclerosis, a large group of 51 cases. A third class included neuritic cases of toxic origin, chief among which ranked influenza with 27 cases; next gout, 22; and blood disorders, malaria, constipation, ptomaine poisoning, mental or traumatic shock, &c., 68. Whilst in no less than 55 cases the causation was obscure. In regard to sex and age, on the average of all cases men were slightly more affected than women—37 as against 31 ratio, but in primary cases the females were decidedly predominant, particularly in the decade from 20 to 30 years. In this period alone there were 77 primary cases, of which 48 were in women and 29 were in men. After the age of 40 years men were more affected. The differences, he thought, were accounted for by the greater risks of females during the period of pronounced sexual activity, and of men in later years from shock, gout, and arterial disease.

Mr. G. A. BERRY (Edinburgh) laid particular stress on the value of the light-difference sense as an indication of the existence of the disorder, the more so as he was inclined to doubt the certainty of ophthalmoscopic examination as to the presence or absence of an actual neuritis. He agreed that the cause of blindness was in the loss of conductivity of nerve fibres and a light-difference defect was the feature of loss of conductivity. Further, the scotomata were homogeneous which was not the case in tobacco amblyopia. The homogeneity indicated an affection of the nerve by pressure and by an equal pressure. He was struck by the relative infrequency of cold among the determining causes as noted by Mr. Gunn; he thought that the proportion should be much larger. In influenza cases he had noticed a coincident affection of other higher sense nerves, as indicated by loss of smell and taste.

Professor UHTHOFF (Breslau) showed drawings of sections of the optic nerve from several toxic cases. The histological features in these he held showed that the affection was primarily an interstitial neuritis; there were increase of the nerve septa from proliferation of the fibrous elements

and similar changes in the vessel walls; there was no indication of a simple degeneration of the nerve fibres; any changes in them were rather secondary to the interstitial changes than a primary degeneration.

Mr. C. HIGGENS (London) commented on the variability in objective symptoms as shown by a case due to a general meningitis in a young lady. The right eye was first affected and became blind; the left was similarly lost later; yet at no time were there any ophthalmoscopic evidences. Many of his colleagues had expressed the opinion that the blindness was the result of cerebral tumour; but after death no growth could be found but a general meningitis which had involved the optic nerves so that they were converted into fibrous bands from chiasma to globe; scarcely a trace of nerve fibres remained.

Mr. F. RICHARDSON CROSS (Bristol) expressed his indebtedness to the valuable work done on this subject by Nettleship and Gunn. The disorder was a peculiar one and in some senses illogical. He looked upon it as an inflammatory condition of the optic nerve in which no evidence could be seen ophthalmoscopically; if such evidence could be seen he concluded that there was a papillitis and not a retro-bulbar condition alone; if there were no objective symptoms it was difficult to say that the disease was present. Yet, as Mr. Gunn had said, the group was distinguished by clinical symptoms which made it almost certain that there was an affection of the optic nerve between the globe and optic foramen. He relied most upon the perimeter for diagnosis, for he found in the neuritis of the atrophic order peripheral contraction and absence of scotomata. He showed charts of cases demonstrating these points.

Professor OLIVER (Philadelphia) insisted upon the importance of the light-difference sense and upon perimetric tests of the macular field. In his practice he found the use of small coloured pellets as test objects, as suggested by Abney, of greatest value.

Dr. A. HILL GRIFFITH (Manchester) believed that a considerable number of cases in rheumatic and gouty people were caused by an inflammation of the fibrous tissue around the optic nerve entrance to the globe of a nature analogous to the episcleritis of the front of the eye. He was unable to substantiate Mr. Gunn's observation that the pupillary reaction was impaired.

Mr. E. NETTLESHIP (London) agreed that the light-difference sense was of the greatest importance, even more so than examination of scotomata. He believed with Mr. Gunn that it was possible in the vast majority of cases to discover fairly early slight difference in the relative conditions of the discs. He also thought that too little stress had been laid on the influence of cold. He did not mean "catching cold" but exposure to low temperatures for many hours.

Dr. G. VICTOR MILLER (Stockton-on-Tees) also agreed upon the direct etiological connexion of cold and rheumatism with the affection. He described cases which were of this order.

Mr. GUNN, in reply, said that he was fully in agreement with the views expressed as to the influence of cold. If his figures—27 in 350—seemed unduly low it was because many which might have been included in the group were complicated by overlapping conditions which seemed more important; this overlapping of possible causes was a matter of much difficulty.

Professor POULTON, F.R.S., read a paper on

Conclusions as to Vision in Birds based upon a Consideration of Mimetic Colour and Pattern in Insects.

Whether animals saw as we saw was a matter of greatest interest. We could not prove that they saw red as we saw red, but we could go a long way to indicate that there was a similarity in the perception of similar structures. A large number of protective devices had been noticed in insects, adaptations which we assumed protected by similitude to indifferent or obnoxious objects. If we examined some of these imitative effects we should note a most extraordinary accuracy in the imitation not only in general form but in particular detail; not only in general colour but even to imitation of stripes, shades, and minute stippling. In the case of the butterflies of North India, which imitated dead leaves, he demonstrated that all those marks on the leaf—holes, discolouration from decay or fungus invasion, exposure of venation—which we recognised as characteristic of a dead leaf were most accurately reproduced on the wings of these insects by the arrangement of the wing scales. Such marks as holes were reproduced in exactly the same manner as an artist would indicate them on the canvas and in a varied manner as it was intended to suggest that the hole was seen in the light or against it. All these precautions were for the purpose of deluding the hungry bird to pass over the fly as a worthless and indigestible dead leaf, hence it was reasonable to suppose that the bird saw those details which go to make up the appearance of a dead leaf just as well as we do. Similarly he showed the exactitude with which the females of some edible insects imitated non-edible or obnoxious insects, both in the general colour, or striping, and minute colour details of the wings, hence we might similarly conclude that birds saw colours with a distinctness equal to our perception of them. The paper was illustrated by a large and splendid collection of insects which were subsequently exhibited in the museum; the demonstrations of Professor Poulton were greatly appreciated.

Mr. M. M. MCHARDY (London) read a paper on

The Maturation and Extraction of Senile Cataract.

He detailed his experiences extending over a period of nearly 20 years of the operation for maturation of cataract by trituration through the cornea after the method of Förster. Many hundred cases had been so treated. When he first performed the operation on carefully selected cases he was delighted with its success. Later, in applying it generally to unselected cases, he had not obtained such good results, but these imperfections of procedure were speedily removed and after a long and extensive experience he was confirmed in his estimation of the value of the method. At first failure attended some 16 to 20 per cent., now only about 2 per cent.; damage to the lens necessitating immediate removal occurred at first in 4 per cent., now the accident was almost eliminated, being under 1 per cent. Iritis there was now little or none, probably owing to the more efficient precautions taken against it with the use of cocaine and atropine. The early liability to loss of vitreous was gone. The prime object of the operation was to get rid of the sticky healthy cortical matter of the lens which was often slow to mature by natural processes and which if not completely removed in extraction seriously delayed the restoration of sight. Trituration so affected this cortex that it rapidly became converted into a non-adhesive substance of bread-and-milk consistency which could be wholly evacuated with the nucleus. There was practically only one contra-indication—the presence of posterior synechiæ indicative of old iritis. He preferred a preliminary iridectomy to immediate iridectomy and extraction.

Mr. HIGGENS said he had given up the operation years ago. The method might be of service in a few but not in the majority of cases. Further, he refrained from doing iridectomy unless some unusual condition compelled. The excuse for trituration, in his opinion, had disappeared with the advent of cocaine; since an efficient local anæsthetic had replaced the general anæsthetic or no anæsthetic of former times there was no necessity for hurry and time could be taken to secure the removal of all the lens matter at the extraction.

Dr. GRIFFITH said he had performed the operation a good many times in the last 18 years. He found no harm resulting therefrom and he was not inclined to abandon the method. It was possible that these cases would have done equally well without the preliminary iridectomy and trituration, yet he felt happier in seeing the disappearance of all the clear cortical matter before operating.

Dr. J. TATHAM THOMPSON (Cardiff) remarked on a curious occurrence in one of several cases which he had triturated simultaneously. In one the lens opacities had completely cleared up and vision remained good to this day. The method he thought was obsolete since the advent of cocaine and McKeown's washing-out method.

Dr. FRANK A. THOMAS (Swansea) related the benefit derived in a case of dense nuclear opacity which disabled a workman for ten years; one month after he had matured the lens by trituration he extracted the lens and obtained ⅔ vision.

Mr. MCHARDY replied.

Dr. KARL A. GROSSMANN (Liverpool) read a paper on

A Case of Astigmatism with Varying Axes.

The subject had eccentrically situated pupils, up and in. After correcting his near vision under homatropine and ascertaining the most agreeable axes for the cylinders required—a downward and outward inclination from the vertical—he neutralised the mydriatic with eserine and found

that for near vision axes having a rather more horizontal inclination were preferred. He thought the phenomenon was due to an eccentric and unequal suspension of the lens, such as was found in the extreme form in the case of aniridia he had demonstrated before the Association in 1902 and 1903. He had noticed other but less marked cases also associated with eccentric pupils.

Mr. BERRY said that cases in which there were slight differences in the axes of astigmatism for near and far vision were not uncommon; the differences depended upon the fact that corneal astigmatism differed over the corneal surface and that with pupils of differing sizes slightly different corneal areas were utilised, so that the summation of corneal and lenticular astigmatism varied.

Professor G. J. BULL (Paris) said that cases of eccentric pupils had been shown by Javal to be associated with incipient keratoconus and that with this association variability in the axes of astigmatism was exceedingly frequent.

Dr. GROSSMANN replied.

THURSDAY, JULY 28TH.

Dr. HILL GRIFFITH opened a discussion on

Intra-ocular Hæmorrhage and Systemic Disease.

At the outset he said he should exclude from consideration all those cases which arose from accident or from optic neuritis, from nephritis, retinitis, or disseminated choroiditis. He wished to consider intraocular hæmorrhages in eyes otherwise free from disease. Such primary or independent hæmorrhages might, like hæmorrhages elsewhere, occur from general conditions—blood changes, anæmia of pernicious types, purpura, scorbutus, and some forms of septic blood conditions, from diseased states of the finer vessels, from back pressure from the heart, and from embolic processes. The hæmorrhages were of most frequent occurrence in the retina, very rarely they might be choroidal, and perhaps, although he had seen none of the class, into the anterior chamber. In most cases of retinal hæmorrhages the retina itself was not changed in appearance apart from the effusion; in some cases there were also localised swelling and exudation probably secondary to the effusion. It had been customary to speak of the former as "retinal hæmorrhage" and of the latter as "hæmorrhagic retinitis" but it was doubtful if there was any real distinction other than that of degree. Intra-ocular hæmorrhages could not be very common, for among 6500 consecutive eye cases of all kinds seen in private there were only 33 cases of the condition, a proportion of 0·5 per cent. In hospital practice some 50 cases were recorded during the same period. These 83 cases might be classed thus: retinal hæmorrhage, 41; "hæmorrhagic retinitis," 20; "subhyaloid," 14; and into the vitreous, eight. In some cases the conditions overlapped. (A tabular list of the cases was shown.) The female sex showed a slightly greater liability than the male—47 as against 36; the preponderance was more marked in the subhyaloid variety—females ten and males four. In the subhyaloid variety the effusion was always about the macula. No difference could be ascertained in the liability of the two eyes. The prognosis both for sight and life was better for this form than for any other. Almost all the cases that were watched recovered with good vision and good health. Under the "vitreous" class were included only those in which there was evidence of a dark-red clot of some size. Many cases of dark floating opacities occurred which were probably of this nature, but for want of certain proof they were better excluded. In all these cases it was likely that the source of the effusion was the retina; in most cases this could be seen to be so. It was possible that the condition might arise from bleeding from the ciliary vessels but he had observed no case of the kind. Of the 61 cases forming the group of "retinal hæmorrhages" and "hæmorrhagic retinitis," a reasonable determining cause could be found for about half of the cases—straining in constipation, coughing in bronchitis or whooping-cough, gout, syphilis, purpura, Bright's disease, organic heart disease in conjunction with hemiplegia or hemianopsia, alcoholism, rheumatism, and the like. He was surprised how few cases were referable to coughing; the strain in "whooping" of children was very severe, as was not infrequently demonstrated by the marked conjunctival ecchymosis witnessed, but he found bleeding only rarely in the retina though he had made it a subject of systematic search. His observation of the association of sclerosis of retinal vessels with liability to small ruptures was in full accord with the extensive researches of Hirschberg, Steadman Bull, Marcus Gunn, and others; it was most marked. He, as well as others, had seen death from apoplexy follow the disregarding of warnings derived from the observation of the condition of the retinal vessels and the presence of minute hæmorrhages. In this connexion he would like to call attention to a point which he had noticed, that the cranial hæmorrhages, whether resulting in paresis or hemianopsia, tended to occur on the same side as the eye which had been noted earlier to contain effusions. Marked as was the liability to hæmorrhages in vessel degeneration it was small compared with the liability in blood changes. Some of the worst and most fatal cases which he had seen were in association with severe and malignant anæmia of varied origins. By way of making a comparative test of the frequency of the condition in hospital patients generally he had made a systematic examination of 500 medical patients whose pupils had been fully dilated. He had found 14 cases in the 500, or 2·8 per cent.—somewhat of a contrast to the 0·5 per cent. amongst his private eye patients.

Mr. LUCIEN HOWE (Buffalo, New York) said that he had witnessed hæmorrhages spring from the ciliary body; the effusion passed behind the lens, set up secondary glaucoma, and necessitated the removal of the eye. In general he was opposed to the assumption that all that appeared to be retinal were such; he was convinced that a great proportion should be properly described as choroidal.

Professor UHTHOFF showed specimens and drawings of two varieties of cases—an extreme præ-retinal, that which is commonly spoken of as subhyaloid but which he believed to be circumscribed by the retinal limiting membrane; and another of a case of a large post-retinal hæmorrhage which had dissected off the retina from the papilla to within a short distance of the ora serrata on one-half of the globe.

Dr. RISLEY (U.S.A.) emphasised the greater liability to hæmorrhages in blood changes over vascular degeneration. He illustrated the generalisation by reference to cases following malarial infection.

Professor OLIVER described three cases bearing on the same point. All were in negroes, and in all grave blood changes were demonstrated by blood counts and hæmoglobin estimations. The red corpuscles were reduced as low as 2,000,000, whilst the white were increased to over 200,000 per cubic millimetre, and the hæmoglobin fell to 25 per cent. The general disorders were diagnosed as splenic leucocythæmia and in one as pernicious anæmia. He described the fundus changes noticed and the conditions of the globes after death.

Dr. G. CARPENTER (London) was surprised to note the comparative infrequency with which hæmorrhages had been noted in the retina during whooping-cough. Some years ago he had made a systematic examination of a large number of children at the Evelina Hospital and had come to the conclusion that small effusions were by no means infrequent, both in the cough and in other conditions where the children struggled and cried with exceptional vigour. On the other hand, he had not found hæmorrhages in anæmia of children even when associated with enlarged spleens.

Some Practical Remarks on Magnet Operations.

Professor J. HIRSCHBERG (Berlin) said that during the last 25 years he had treated upwards of 300 cases of injury to the globe by steel particles by some application of the magnet, principally for the extraction of the intruding fragment. He had also carefully followed the published experiences of other workers and had noticed rules for the practice of the treatment which were somewhat of a puzzle to him. Foremost must always come the symptom of pain. Yet the absence of this indication must not be taken as indicating that no foreign body was present. In not a few such cases he had been able by the use of the sideroscope or by x-ray photography to demonstrate in the clearest manner a considerable fragment when no pain was complained of. He found the sideroscope to be a very suitable instrument provided it was so arranged as to be independent of general influences that so commonly existed in great cities owing to the extensive use of electric currents. He made it a point always to test the reliability of the instrument before and after use on the subject. It had been said that an encapsulated particle in a quiet eye, even though clearly demonstrated and localised, should be left alone. He thought the practice to be bad, as sooner or later the eye was sure to be a total loss. As regarded magnets, he used all

instruments; he had no prejudice. The hand magnet, the medium-sized, and the giant had each their points of favour. A point in favour of the hand form was the possibility of associated use of ophthalmoscope and magnet, impossible in the larger forms. On the other hand, cures were effected by the giant form which were not possible with any weaker instrument. As yet the knowledge of the possibilities of the different instruments was not sufficiently distinct. But his inclination was to use the hand form in recent open wounds and to extract the old encapsulated bodies with the giant; this it did most effectually, though not always without after-regrets in the form of iridocyclitis. It was too early to come to a clear determination of the prospects attending these operations and to distinguish between the gravity of the varying positions of the foreign body. In 64 cases 36, or 56 per cent., retained good permanent vision; of these 23, or two-thirds of the whole, retained very good vision—i.e., from 1 to $\frac{1}{3}$. In 22 cases excision followed the extraction. In conclusion, he lamented the recent decease of McKeown of Belfast to whose work so much of our present success with the magnet was due.

Dr. A. BARKAN (San Francisco) remarked on those cases in which a flying fragment of steel traversed the globe from end to end and became imbedded in the retro-orbital tissues. In such cases the careful application of x-ray methods would save a comparatively safe eyeball from further injury. In an experience of 70 cases he was able to corroborate the advantages derivable from the use of the sideroscope, especially the improved form of Hirschberg.

Mr. MCHARDY believed that the first step in the proper treatment of these cases was the stereoscopic localisation of the foreign body by x-ray photography and the sideroscope. Only by this proper delay could the danger be avoided of probing a wounded eye with the hand magnet in cases where the eye was only cut by a flying fragment which had not lodged within the eye globe at all.

Professor HIRSCHBERG replied.

On the Visual Acuity of Savages.

Dr. W. H. R. RIVERS (Cambridge) said there was a strong popular idea that the eyesight of savage races was peculiarly keen and penetrating. Wonderful stories had been told of their extraordinary powers. He and others had conducted a very large series of experiments with the purpose of ascertaining the visual acuity of different peoples under similar conditions and tests. The best test was that of the letter **E** held in varying positions and at different distances. In all cases the examination was made with both eyes and in the open air. Races so diverse as the inhabitants of Torres Straits, Borneo, Indian aborigines and Brahmins, Mongols, negroes, and Europeans—civil, military, naval, and children at school—had been tested. It was found that there was very little difference over this wide range. There was a general average of acuity so that the letter **E** (of the size marked D = 6 of the Snellen test type) could be distinguished in any of its four positions at a distance of 13 metres. 50 per cent. of the subjects examined had two or three times "normal" ($\frac{6}{6}$) vision by this test. When abnormal cases of errors of refraction, which occurred in all races, were excluded the difference between races, savage or civilised, was extremely small. To what then was due the supposed great sight of savages? To a familiarity with their surroundings more than to anything else. The Australian tracker was a marvel in his natural habitat but no better than any country yokel when transported to Melanesia. In short, it was the development of their powers of observation which was extraordinary. The visual acuity at different ages had been the subject of some investigation. It was found to increase with age till 20 to 25 years was reached, then followed a period of constancy until 35 to 45 years when there was a decline. The decline was more rapid and earlier in onset in tropical countries than in home countries; this he thought was due to the earlier onset of lenticular changes which appeared much more frequently in hot climates. Our standard of "normal" vision ($\frac{6}{6}$) was a purely arbitrary one, for many psychological factors came into play in the reading of letters; these were not wholly excluded by the use of such a simple test as the **E**, for it was found that intelligent people could accurately judge the position of the letter even when its details were wholly blurred, by noting the slight deficiency of density on the open side of the letter.

Remarks on the Diagnosis and Treatment of Glaucoma.

Mr. BERRY said that despite the large amount of work which had been done with so much care by so many workers the real nature of glaucoma was still obscure. It was pretty certain that the altered balance in income and outgoing of the circulatory fluids of the eye was a factor and probably more a deficient outgoing than an increase in influx. Then there had been firmly established the part played by the changes in the anterior filtration angle; but with all this it was still impossible to explain the curative action exercised by the operation for iridectomy. The diagnosis was a matter of difficulty in the "simple" long-continued cases of slow progression without congestive attacks. Some had thought the distinction extremely difficult, but it had not seemed so to him, since he had been able to use the delicate test for the field of vision permitted by Bjerrum's screen test which was greatly superior to that of the ordinary perimeter and could be relied upon in cases where there was no increase in tension discernible. Von Graefe's original directions for iridectomy were most explicit. He insisted on a wide incision, as wide an iridectomy as possible, the tearing away of the iris as close to the ciliary processes as possible, and a slow evacuation of the aqueous. This procedure was based on the mistaken idea that the iris was a secreting surface. Mr. Berry's experience was distinctly in favour of iridectomy. He had little faith in the safety of myotics but his support of the operation was qualified by the method adopted. He preferred a keratome to the narrow-bladed knife; he did not seek to get his incision into the filtration angle. He doubted the possibility of doing this, but supposing it could be done, asked: What advantage would accrue to filtration by creating a cicatrix within the seat of the process? He found no necessity for the old iridectomy of extreme width and followed his narrower incision by withdrawing the iris by Tyrrell's hook and the removal of a correspondingly small segment of iris. In glaucoma simplex iridectomy checked the disease but did not result in an improvement of the lost peripheral and central vision such as was a frequent result of operation in the acute congestive cases.

Mr. RICHARDSON CROSS said that he had had no experience of the screen test but considered the perimeter invaluable. To him the difficulty lay in distinguishing between certain low grades of glaucoma simplex and optic atrophy. The difficulty could be often cleared up by the instillation of cocaine. Should it be followed by the appearance of pulsating arteries in the fundus an increase of tension was indicated; also perimetry showed that the tendency to constriction of the field was early marked in atrophy and not in glaucoma. There could be no doubt as to the utility of iridectomy but it was not without danger in old folk in whom the zonula was weakened. In the glaucoma occasionally seen in myopes due, he thought, to a change in the filtration properties of the secreted fluids, the operation of sclerotomy was most successful.

Dr. W. A. BRAILEY (London) emphasised the necessity of early diagnosis and interference to obtain the best results, whether myotics or operation was relied upon. He was inclined to give more credit to the use of myotics than he had used to do but it must be begun early and continued without intermission. In cases where drugs appeared of no avail he did not hesitate to operate even though the visual acuity was high.

Mr. G. E. WHERRY (Cambridge) commented on Mr. Berry's use of a hook for the drawing out of the iris from the corneal incision. He thought that this method prevented removal of the iris to its root, a point so strongly insisted upon by von Graefe, the introducer of the operation.

Professor HIRSCHBERG remarked that it was a life work to obtain a correct view of iridectomy in relation to glaucoma. He had recently published the results of his treatment of 600 cases. He found that the operation was best for the greatest number of patients. In some few cases it resulted in harm to the patient, for in some a malignant glaucoma supervened upon an iridectomy for glaucoma simplex. These disastrous results depended not on the operation but on the peculiar idiosyncrasy of the patient; in the greater number these patients were women. In other cases neither good nor harm resulted from operation; vision gradually diminished. He did not find myotics liable to produce conjunctival irritation as had been suggested; he was careful to see to the frequent sterilisation of fluids used.

Professor UHTHOFF summed up his experience of operation in this condition in a simple set of statistics: In 8 per cent. vision was a very little better for the operation;

in 40 per cent. the vision remained unchanged; in 40 per cent. there was no success, vision slowly deteriorated; and in 8 per cent. the patient was rendered the worse.

Mr. BERRY, in reply, said that in his experience the danger of malignant glaucoma referred to by Professor Hirschberg was extremely small; so rare was the condition that it should not deter from operation.

Mr. W. ADAMS FROST (London) read a paper on

Operative Treatment of Myopia.

The removal of the lenses for high myopia was an established surgical procedure. Better vision could be obtained and that without the use of glasses. He did not consider that success had been obtained unless these two results followed extraction. There were not many cases suitable for this form of treatment in England. In selecting cases they had to consider—1. The degree of myopia, which should not be less than 13 D., or one requiring the use of a correcting lens of 15 D. at 10 millimetres from the eye. 2. Visual acuity, and for this as good a test as any was the ability to read at the patient's remote point J. 1. The test was crude, yet it indicated a reasonable integrity of the retinal elements at the macula. 3. The age and general condition of the patient. The operative results were often marvellous; the question at issue was the permanence of the result: Did the procedure increase the liability of these folk to detached retina? They had to remember that patients were in any case liable to this disaster, a liability not known by any trustworthy statistics; that it was usual to operate on the worst eye, just the one most liable to detachment; then they had to estimate the nice point as to how long after operation a detachment occurring was due to the operation. He had seen detachment occur as early as ten weeks and as late as six years after operation. Then, again, they wished to know how long a period must lapse before they could consider the results obtained permanent. One of his cases had remained good for eight and a half years, 12 for five years, and four for three years. His impression was that the operation did enhance the danger of these eyes to detachment, but it was evident that it did not follow in the majority of cases. There was also the question whether after successful operation on one eye the second should be attempted. His opinion was unhesitatingly no; for it was almost impossible, in the unequal myopia of most of these eyes, to obtain equality of vision with the two eyes and, further, the patient lost the ability to read without glasses which the one myopic eye gave him.

Professor LANDOLT (Paris) said that he was aware of much in favour of the operation and he greatly disliked to disparage that which others praised. Yet he could not forget that myopia was only a symptom of a disease associated with grave changes in the uvea. These features tended to enhance the risks of extraction of mature cataractous lenses; how much more serious then in the removal of healthy lenses. In most cases of high myopia one eye was bad and the other was worse; were they to operate on the better eye in the hopes of a better result or to add to the hazards of the operation by choosing the worse eye? He thought that those cases only were suitable where the eyes were of nearly equal degrees of myopia and showed no gross fundus changes.

Mr. S. JOHNSON TAYLOR (Norwich) advocated repeated needling of the lens as less liable to produce alterations of tension than the rapid needling and evacuation of the lens matter.

Mr. FROST considered that the actual details of the operation could not affect the liability to detachment years after operation. He had utilised both the slow and the rapid methods but could find no indication that they influenced the ultimate issue.

Mr. ERNEST CLARKE (London) gave

A Résumé of 20 Years' Treatment of Myopia.

His habit, briefly stated, was to estimate the refraction of patients under 20 years of age with atropine, above that age with homatropine, fully to correct the error found, but not to give cylinders under 1 D. unless they were found to improve vision. He did not allow any reduction for near work. Of 1129 cases, 532 had been under observation for periods averaging four and a half years. Of these 469, with myopia varying from 0·75 D. to 20 D., remained stationary; in 152 cases the visual acuity had improved and in 63 cases the myopia had increased. Of these 63 cases, in 43 the increase was one dioptre or less, in 13 it was from 1 to 2 D., and in three it amounted to 4 D. Practically only 16 cases showed any noticeable increase in the myopia and in these the increase was not serious. He thought that these results tended to confirm the practice of giving full correction; it prevented that excessive convergence which was, he believed, the main factor in maintaining a progress of the disease.

Dr. A. MCGILLIVRAY (Dundee) communicated some observations on

The Temperature of the Cornea and its Relation to Corneal Therapeutics.

He had conducted several experiments on the temperature of the cornea and conjunctiva with the thermo-electric cup which agreed with the published work of Silex. The temperature of the healthy cornea was 10° less than that of the body, it was raised when the lids were closed, and when the eye was covered by pad and bandage it was nearly the same as that of the body. In inflammatory conditions a similar increase was found. These conditions had a marked influence on the growth of micro-organisms. Most of those likely to infect the eye flourished at an optimum temperature, practically that of the body. Hence it followed that covering the eye in inflammatory conditions tended to facilitate the growth of these organisms and also hindered the usual circulatory processes by rendering the eye immobile. He advocated an open treatment of inflammatory affections and the local use of cocaine as tending to reduce vascularity. The danger of desiccation of the corneal epithelium by the use of cocaine did not apply when ointments were used and large loose shades diminished the irritation of light.

THE ANNUAL EXHIBITION.

III.—SANITARY APPLIANCES, DISINFECTANTS, ETC.

The number of disinfectant preparations shown at the Oxford exhibition was decidedly smaller than in previous years though the representation of sanitary appliances in general was well maintained. Messrs. Doulton and Co., the well-known potters of Lambeth, had an interesting exhibit comprising white glazed fire-clay sinks, a white vitreous enamelled rolled-edge bath, and the "Compact" Simplicitas wash-down closet. The strong white earthenware circular-fronted lavatory should also be mentioned. It is fitted with a vulcanite removeable "waste" fixed in the recess, a patent combined hot and cold supply fitting being fixed in the wall and actuated by the foot the temperature of the water being controlled by the left or right movement of a pedal. The Jeyes' Sanitary Compounds Company, Limited, of 64, Cannon-street, London, E.C., exhibited specimens of "cyllin"—formerly sold as creolin and now described as a new coal-tar disinfectant free from carbolic acid or its homologues and containing a new substance discovered in tar. There were preparations for special medical use and for domestic purposes. Bacteriological experiments show that "cyllin" is 11 times more efficient as a germicide than is pure carbolic acid on the bacillus typhosus and 30 times more efficient when tested against the bacillus pestis, while its toxic properties are eight times and its caustic properties ten times less than that of tar acid. An emulsion of "cyllin"—1 in 800 strength—is sufficient, it is stated, to sterilise sputa infected with tubercle bacilli. It has been used in the form of spray in inhalation with some success in tubercle of the lungs. The Berkefeld Filter Company, Limited, of 121, Oxford-street, London, W., exhibited many adaptations of the Berkefeld filter. This filter is known as an effective remover of germs from drinking water and its action is relatively rapid. The Peat Products Company of 71A, Great Russell-street, London, W.C., exhibited their interesting "sphagnol" preparations, sphagnol being described as a combination of the antiseptic and emollient vegetable tars and oils obtained in the distillation of peat. It is suitably incorporated with soap. Lints, cotton-wools, absorbent gauze tissue, bandages, surgeons' tow, splint padding, and sheet wadding were the specialties exhibited by the Liverpool Lint Company of Mark-street Mills, Netherfield-road North, Liverpool. A very interesting product is petol (Petol, Limited of 86, Cannon-street, London, E.C.), a base derived from peat and possessing marked antiseptic properties. It has been used in eczema and ringworm with distinct advantage. Petol may be obtained in several forms, amongst which are a salve, suppositories, soaps, and a disinfecting fluid and powder. Mention might appropriately be made in this section of the sanitary mattress of the Marshall

Sanitary Mattress Company, Limited, of 34, Eagle-street, London, W.C. The mattress seems to us fully to justify the adjective "sanitary." It contains over 1000 coppered steel springs, each of which is encased in an upright position in a separate calico pocket and works independently of the others. There are thus no friction and no noise and it is difficult to see how such an arrangement could get out of order. Moreover, protected ventilators are placed at each end which allow a free circulation of air which is naturally changed by every movement of the occupant. The same principle is applied to a pillow, a mattress support, and a folding bed.

IV.—FOODS AND FOOD PRODUCTS.

Milk and milk products formed a large proportion of the exhibits in this section. Amongst the best known dry-milk preparations is plasmon the nutrient value of which has been thoroughly established in both clinical and dietetic practice. The preparations shown by the International Plasmon, Limited, of 66A, Farringdon-street, London, E.C., and 56, Duke-street, Grosvenor-square, London, W., included plasmon biscuits, diabetic biscuits, plasmon cocoa, beef plasmon, and plasmon arrowroot, the latter being found excellent as a real food in diarrhœa and dysentery without any irritating action upon the bowel. The Aylesbury Company, Limited, of St. Petersburg-place, Bayswater, London, W., showed an excellent series of specially prepared milks—humanised milk, sterilised milk, peptonised milk, cream milk, koumiss, and so forth. The milk employed is obtained from farms periodically inspected by medical and veterinary officers. The "klonol" brand of dried milk shown by Messrs. Irven and Co., of 7 and 8, Union-court, Old Broad-street, London, E.C., represents the entire solid constituents, including the fat, of milk. It is therefore a complete food, but it would be important to determine how far the nutrients are chemically and physiologically modified by the process of manufacture which consists in evaporating the milk rapidly at a high temperature. A similar preparation was that shown by the Galak Milk Products, Limited, of 118, Fenchurch-street, London, E.C., under the name of "galak." In this case, it is asserted that dietetically there is no difference between the food value of this dried preparation and fresh milk. Messrs. Fairchild Brothers and Foster of Snow-hill-buildings, London, E.C., presented an instructive exhibit illustrating the preparation of "panopepton" which is made from prime lean beaf and wheat flour. In the process these are completely dissolved and a rapidly diffusible and pleasant liquid food is the result. Panopepton is a powerful restorative in the convalescing stage and answers admirably as a nutrient in disordered nutrition. The exhibit included "peptogenic milk powder," by the use of which milk exhibiting the composition of human milk may be extemporised from cow's milk; pepsencia, containing the digestive principles of the peptic glands; and other preparations of pepsin, trypsin, and diastase. Meat preparations in very great variety were shown by several well-known firms. Bovril, Limited, of 152 to 166, Old-street, City-road, London, E.C., showed in association with bovril preparations the excellent food virol, an emulsion of red bone marrow, malt extract, and eggs, forming an efficacious and agreeable substitute for cod-liver oil. Messrs. Armour and Co., Limited, of 46A, Holborn Viaduct, London, E.C., showed digestive ferments, beef-juice, extract of red bone marrow, and various preparations of the powerful hæmostatic principle of adrenal substance, and various glandular extracts in powder and tablet form. Liebig's Extract of Meat Company, Limited, of 4, Lloyd's-avenue, London, E.C., exhibited lemco, a highly concentrated beef extract free from fat; and oxo, a fluid beef containing the nourishing as well as the stimulating crystalline substances of beef. Messrs. Brand and Co., Limited, of 11, Little Stanhope-street, Mayfair, London, W., showed specialities for invalids, essences of beef, mutton, veal and chicken, turtle jelly, and soup, meat juices and a nutrient beef powder; and the Peptenzyme Company, of 80, Gloucester-road, South Kensington, London, S.W., exhibited peptenzyme, containing the digestive secretions of the salivary, peptic, pancreatic, hepatic, and splenic glands; protonuclein, said to contain the tissue-building agencies of the lymphoid glands; and trophonine, an agreeable and readily assimilable liquid food. Of foods prepared for special purposes may be mentioned those made by Messrs. G. Van Abbott and Sons of Baden-place, Crosby-row, Borough, London, S.E., for sufferers from diabetes, dyspepsia, and obesity, including starchless bread and biscuits, almond bread, and bran gluten. Messrs. Callard and Co. showed an assortment of new foods specially adapted for diabetic patients—e.g., sugarless marmalade, chocolate, beverages, jellies, and starchless breads, biscuits, and cakes. The list may be closed by referring to the preparation known as ovo-lecithin, a pure distearo-glycerophosphate of choline made entirely from the yelk of egg (Billon's Ovo Lecithin Depôt, 16, Water-lane, Great Tower-street, London, E.C.). Ovo-lecithin acts favourably on the processes of nutrition and hence has proved valuable in chlorosis, anæmia, and nervous disorders.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AN ordinary Comitia was held on July 28th, the PRESIDENT, Sir WILLIAM SELBY CHURCH, Bart., K.C.B., being in the chair.

The following gentlemen having passed the requisite examination were admitted as Members of the College: John Frederick Gordon Dill, M.A., M.D. Cantab.; Edward Henry Douty, M.A., M.D. Cantab., L.R.C.P. Lond.; Wilfred Stephen Fox, M.A. Cantab., L.R.C.P. Lond.; Ernest Edward Glynn, M.A., M.B. Cantab., L.R.C.P. Lond.; Henry Lawrence McKisack, M.D. R.U.I.; Geoffrey Richard Slade, M.A., M.D. Cantab., L.R.C.P. Lond.; and Thomas Grainger Stewart, M.B. Edin.

Licences to practise physic were granted to 115 gentlemen who had passed the required examination.

Diplomas in Public Health were granted to the following gentlemen: Charles Thomas Blackwell (Major R.A.M.C.), M.D. Durh., L.R.C.P. & S. Edin.; Dunstan Brewer, L.R.C.P. Lond., M.R.C.S. Eng.; John Catto, M.B., B.S. Aberd.; Basanta Kumar Chatterjee, L.R.C.P. & S. Edin., L.F.P.S. Glasg.; Stanley Cornell Clapham, L.R.C.P. Lond., M.R.C.S. Eng., M.B., B.S. Durh.; John Matthewson Clements, M.B., B.Ch. R.U.I.; Walter Ernest Llewellyn Davies, L.R.C.P. Lond., M.R.C.S. Eng.; Thomas Stokoe Elliot, L.S.A.; Norman Faichnie (Major R.A.M.C.), M.B., B.S. Durh.; Henry William Grattan (Captain R.A.M.C.), L.R.C.P. Lond., M.R.C.S. Eng.; John William Gromitt, L.R.C.P. Lond., M.R.C.S. Eng.; Hugh Llewelyn Jenkins, M.B., Ch.B. Vict.; John Isaac Pratt, L.R.C.P. Lond., M.R.C.S. Eng., M.B. Toronto; Morgan James Rees, L.R.C.P. Lond., M.R.C.S. Eng., M.B. Lond.; Frank Ernest Rock, L.R.C.P. Lond., M.R.C.S. Eng., M.D. Lond.; Godfrey William Simpson, L.R.C.P. Lond., M.R.C.S. Eng.; Charles Augustus Spooner, L.R.C.P. & S. Edin., L.F.P.S. Glasg.; John Charles Baron Statham (Captain R.A.M.C.), L.R.C.P. Lond., M.R.C.S. Eng.; John Robert Steinhaeuser, L.R.C.P. Lond., M.R.C.S. Eng., M.B. & B.S. Lond.; Robert Lewis Thornley, L.R.C.P. Lond., M.R.C.S. Eng., M.D. Lond.; Philip Vickers, M.B., Ch.B. Edin.; and William McConnel Wanklyn, L.R.C.P. Lond., M.R.C.S. Eng.

The following communications were received:—

1. From the secretary of the Royal College of Surgeons of England reporting certain proceedings of its Council on July 14th.

2. From the Lord President of the Privy Council in reply to the College respecting the Parliamentary Bill proposed by the General Medical Council.

3. From Mr. Edmund Gosse, librarian to the House of Lords, asking leave to have photographed (*a*) the portrait of Dr. Radcliffe and (*b*) his gold-headed cane in possession of the College.—The application was granted.

4. From Dr. Tyson asking leave to have photographs taken of the portraits of Dr. Edward and Dr. Richard Tyson in the College.—The application was granted.

5. From the Board of Education asking the advice of the College as to the formation of a consultative committee to control the general system of school certificates for elementary schools.—The matter was referred to the committee of management.

On the nomination of the President and Council the following appointments were made: Censors: Dr. Thomas Henry Green, Dr. William Henry Allchin, Dr. Norman Moore, and Dr. Frederick Taylor. Treasurer: Sir Dyce Duckworth. Emeritus Registrar: Sir Henry Alfred Pitman. Registrar: Dr. Edward Liveing. Harveian librarian: Dr. Joseph Frank Payne. Assistant registrar: Dr. Oswald Auchinleck Browne.

Elected members of the library committee: Dr. Philip Frank, Dr. Norman Moore, Dr. William Henry Allchin, and Dr. Archibald Edward Garrod. Curators of the museum: Dr. William Howship Dickinson, Dr. Henry Charlton Bastian, Dr. William Cayley, and Dr. John Abercrombie. Finance committee: Dr. George Fielding Blandford, Dr. James Frederick Goodhart, and Sir Isambard Owen. Examiners: Chemistry and chemical physics: Mr. Harold B. Dixon, F.R.S., Mr. John Millar Thomson, F.R.S., Mr. Frederick Daniel Chattaway, Ph.D., D.Sc., Mr. Alexander Mitchell Kellas, F.C.S., and Mr. John Addyman Gardner, F.C.S., F.I.C. Materia medica and pharmacy: Dr. Frederick Willcocks, Dr. Walter Essex Wynter, Dr. Henry Albert Caley, Dr. Francis Whittaker Tunnicliffe, and Dr. James Purves Stewart. Physiology: Dr. Ernest Henry Starling, Dr. Bertram Louis Abrahams, and Dr. Leonard Erskine Hill. Anatomy: Dr. Bertram C. A. Windle, F.R.S., and Dr. Robert Howden. Medical anatomy and principles and practice of medicine: Dr. Samuel Hatch West, Dr. Theodore Dyke Acland, Dr. George Newton Pitt, Dr. Sidney Philip Phillips, Dr. William Pasteur, Dr. William Collier, Dr. Norman Dalton, Dr. Frederick John Smith, Dr. Francis George Penrose, and Dr. John Rose Bradford, F.R.S. Midwifery and diseases peculiar to women: Dr. Alfred Lewis Galabin, Dr. Francis Henry Champneys, Dr. George Ernest Herman, Dr. William Rivers Pollock, and Dr. Edward Malins. Public health: Part I.—Dr. Arthur Pearson Luff. Part II.—Dr. William Heaton Hamer.

The PRESIDENT announced that he had nominated Dr. Frederick Roberts as Harveian orator for 1905. He also gave notice that Dr. F. F. Caiger would deliver the Bradshaw lecture on Nov. 15th instead of on Nov. 3rd as previously announced.

Sir WILLIAM BROADBENT was re-elected a representative on the executive committee of the Imperial Cancer Research Fund.

A report dated July 18th was received from the committee of management. The committee recommended that Felsted School, Felsted, which is already recognised for instruction in chemistry, physics, and practical chemistry, should be now recognised for the teaching of biology. Also, that St. Mary's Hospital, Manchester, should be recognised as a place of instruction in midwifery and gynæcology. The committee reported that it had considered the communication from the General Medical Council containing various resolutions in regard to the teaching and examination of the subjects of the first year of the curriculum and that such resolutions of the General Medical Council do not recommend anything which is not already included in the latest regulations of the Conjoint Board.—The report was adopted.

The quarterly reports of the College Finance Committee, of the Library Committee, and of the curators of the museum were received and adopted. After further routine business had been conducted the PRESIDENT dissolved the Comitia.

THE CONGRESS OF THE SANITARY INSTITUTE.

THE twenty-second Congress of the Sanitary Institute was held at Glasgow from July 25th to 30th under the Presidency of the Right Hon. Lord BLYTHSWOOD, LL.D. The proceedings began on the 25th, with a reception of the members of the Congress in St. Andrew's Hall by the Lord Provost, followed by an inaugural address by the President, Sir RICHARD DOUGLAS POWELL, who took for his subject the Prevention of Consumption. He urged the importance of physical training in schools and dwelt on the necessity for adequate ventilation and cleanliness in dwellings. It was from the poor and crowded populations that the vast death-rate from consumption arose. It was from them that the great bulk of poisoned material emanated; yet measures for the treatment of consumption amongst the poor were as yet hopelessly inadequate. If the death-rate from consumption was to be decreased the municipal authorities throughout the kingdom would have to make great improvements upon the work which had already been done.

On the following day the sectional meetings of the Congress were opened at the University, the University court having granted facilities for this purpose. There was a large attendance of members including delegates from medical and municipal authorities in all parts of the country and many sanitary authorities from the continent.

SANITARY SCIENCE AND PREVENTIVE MEDICINE.

The section of Sanitary Science and Preventive Medicine met under the presidency of Professor J. GLAISTER (Glasgow), who in his opening address dealt with the influence of small-pox hospitals upon neighbouring populations with regard to the spread of the disease. In this connexion he discussed the doctrine of aerial dissemination and contrasted the position of this country with that of Germany with respect to the treatment of small-pox in hospitals. He thought that much of the evidence in support of aerial dissemination was of a very flimsy character. The history of the Glasgow epidemic abundantly showed that the practice of vaccination by giving an immunity against small-pox for a given number of years had caused, when small-pox made its appearance in the city, the development of a large number of mild ambulant cases of the disease which were not discovered and which did not call for medical attendance. That such cases were numerous in Glasgow the evidence of the medical officer of health was clear. Hence, if in the future they expected to deprive small-pox of its great anxiety to communities, then revaccination as practised in Germany must become the law; and before they could determine that aerial dissemination played any part in the propagation of the disease certain critical tests must be employed statistically and otherwise in any epidemic, so that the direct and mediate sources of infection are exhausted before this theory is invoked to account for the circumstances. In Germany the practice of vaccination and revaccination, he said, was universal and if revaccination became compulsory in this country after a comparatively few years it would be possible for small-pox hospitals as such to fall comparatively into disuse.

In the same section Dr. EBENEZER DUNCAN (Glasgow) raised a discussion on the following motion:

> In view of the prevalence of phthisis pulmonalis in the working-class population of Great Britain and of the suffering, pauperism, and death resulting from the dissemination of that disease this Congress recommend the council of the Sanitary Institute to memorialise the Local Government Boards of England and Scotland to allow health authorities to add phthisis pulmonalis to the schedule of notifiable diseases.

Dr. Duncan afterwards agreed to the deletion of the reference to the working classes and to the motion being altered so that the memorial should be to the effect that local authorities should be allowed to make the disease notifiable on such conditions as might be approved by the Local Government Board. In this form the motion was passed by a very large majority.

The other subjects discussed in this section were: The Cause of Small-pox, Inspection of School Children, Malaria and Consumption in the Tropics, Infantile Mortality, and the Sanitary Condition of Vessels.

In dealing with the latter subject Dr. WILLIAM WRIGHT, medical officer to the Glasgow port local authority, advocated that port local authorities should combine in one strenuous effort to take over into their own hands the sanitary supervision of ships and to displace the Board of Trade from a position which up to the present had been nothing short of a sinecure. The officers of the Board of Trade, he contended, had no real knowledge of the sanitary requirements of a ship. The power should therefore be transferred to those who were properly qualified to advise. After further discussion the following motion was adopted:—

> In consideration of the sanitary condition of the mercantile marine this section is of opinion that the sanitary control of ships both during and after construction should be vested in port sanitary authorities and that medical inspectorships for shipping should be created in the staffs of the Local Government Boards of England, Ireland, and Scotland to supervise all suggestions from such port authorities for the consideration and approval of the Board; and the section recommend the council of the Institute to bring the proposition under the notice of the proper authorities.

The work of the other sections, which was of a more technical character, can only be referred to very briefly. The section devoted to Engineering and Architecture met under the presidency of Professor H. ROBINSON. Among the papers read and discussed were those dealing with the Supervisory Control of Water Supplies, Domestic Sanitary Engineering, House Drainage, and Uniform Distribution of Sewage on Filters.

The section devoted to Physics, Chemistry, and Biology also met, Professor FRANK CLOWES (London) presiding. In

his address he referred to two subjects which were of extreme interest to Glasgow as a city—namely, the best methods of maintaining the purity of the atmosphere and of disposing of the sewage.

MUNICIPAL AND OTHER CONFERENCES.

A series of conferences of special bodies—municipal representatives, engineers and surveyors to county and other sanitary authorities, sanitary inspectors, and medical officers of health also took place, and an important conference was held on the Hygiene of School Life.

At this latter conference Dr. A. K. CHALMERS, medical officer of health of Glasgow, read a paper with reference to the Examination of School Children in Glasgow. His results more or less confirmed the impressions which the anthropometric committee years ago made plain—viz., that in towns there were children of corresponding ages who were both smaller in stature and less in weight than children brought up in the country. Grading children according to the class of house in which they lived it was found that those who lived in houses of three rooms and upwards had a better physique, judging by height and weight, than those living in houses of two rooms, and again that the latter were better developed than those living in houses of one apartment. These facts had an important bearing on the measures to be adopted for the physical training of children and established a case for further inquiry both as to food and clothing.

At the conference of sanitary inspectors Mr. PETER FYFE (Glasgow) read a paper entitled "What People Sleep on," an outcome of an investigation into the bed-making trade. As a result of his examination as to the nature of wool-flock he found that it was manufactured from a mass of rags the rejected of every class of the population. Nothing in the nature of cleansing or disinfection was attempted. All went into the machine if sufficiently dry and became transformed into flock. The very filthy character of this material was proved by both chemical and bacteriological examination. The results obtained, in the words of Dr. R. M. Buchanan, city bacteriologist, indicated an amount of uncleanliness in the form of live potential dirt that was shocking to contemplate when the purpose for which the material was used was considered, and revealed a state of matters calling for remedial action. At the present time, however, sanitary officials were powerless to cope with this widespread evil—one well calculated to bring disease into the closest proximity with the labouring class.

At the conference of medical officers of health the subjects dealt with were chiefly those relating to the notification of tuberculosis, and the control of small-pox "contacts." After the discussion on the latter subject the following motion was passed :—

That this Congress is of opinion that the public health has suffered seriously through the transmission of small-pox by tramps and recommend the council of the Sanitary Institute to petition Parliament to take such measures as will place vagrants under control and reduce the risk of disseminating infection.

A conference of women on Hygiene, under the presidency of the Duchess of MONTROSE, was also held, at which such subjects as the physical training of women and the registration of nurses were discussed.

The entertainment of the members and their friends received the necessary attention and general satisfaction was expressed at the great success which had attended the whole proceedings of the Congress.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary meeting of the Council was held on July 28th, the President, Mr. JOHN TWEEDY, being in the chair.

The SECRETARY reported the death, at the age of 87 years, of Sir John Simon, K.C.B., past President of the College.

The following motion was passed :

The Council hereby express their deep regret at the death of Sir John Simon, K.C.B., past President of the College, and their sincere sympathy with the members of his family in the loss which they have sustained. The Council feel that the College has lost one of its most distinguished Fellows whose great services in the promotion of measures for the improvement of the public health have been of lasting benefit to the country and will cause his name to be ever remembered with respect and honour.

Diplomas of Membership were directed to be issued to 115 candidates, and in conjunction with the Royal College of Physicians of London diplomas in public health were directed to be issued to 22 successful candidates.

The report of the Finance Committee was received and adopted. The main items of the report were as follows. The gross income of the College for the past year amounted to £26,969, being £547 more than last year. From the examinations of the Conjoint Examining Board for England there was a decrease of £315. The incidental receipts from the Conjoint Examining Board were £558 more than in the previous year, which were chiefly due to letting rooms in the examination hall. From candidates for the Fellowship there was an increase of £165. From the Licence in Dental Surgery there was a decrease of £51. The expenditure amounted to £24,174, or £242 less than in the previous year. The expenses of the examination hall were £204 less than last year. The museum cost £204 less than last year. The extraordinary expenditure was heavy, amounting to £1014, the chief item of which was a premium of £418 for a seven years' policy of fire insurance. The balance of income over expenditure amounted to £2794. During the year the investments of the College have been increased by £1000 Local Loans 3 per cent. stock and £1500 London County 3 per cent. stock. A sum of £1612 has been expended upon the redemption of the land tax on portions of the College property.

On the recommendation of the committee of management it was resolved that Felsted School should be recognised as a place for instruction in biology and that St. Mary's Hospital, Manchester, should be recognised as a place of instruction in midwifery and gynæcology.

The following report from the delegates appointed to consider the letter from the Colonial Secretary in reference to diplomas in tropical medicine was received and adopted :—

The delegates have to report to the two Royal Colleges that, having fully considered the letter from the Secretary of State for the Colonies together with the proceedings of the two Royal Colleges on the subject of diplomas in tropical medicine, they have unanimously adopted the following recommendations :—

1. That with the permission of the authorities of the School of Tropical Medicine visitors be appointed by the Royal Colleges of Physicians and of Surgeons to attend the examinations of that school and to report upon the scope of the course of study and of examination, and that a request be addressed to the naval, military, and colonial authorities to allow visitors appointed by the two Royal Colleges to attend their examinations in tropical medicine for a similar purpose.

2. That at the end of a year a report be addressed by these visitors to the Royal Colleges on the whole subject of tropical medicine.

3. That in the event of the Royal Colleges adopting these recommendations a communication be sent to the Colonial Secretary informing him of these proceedings.

Mr. R. J. Godlee was appointed as visitor, and the President was authorised to appoint an additional representative if he should think it desirable.

A letter was read from Mr. Robert L. Morant, secretary to the Board of Education, forwarding a copy of certain suggestions submitted to the Board by the consultative committee for a system of school certificates, stating that the Board is anxious to obtain an expression of the views of the Universities and other bodies interested upon the important issues raised in the suggestions, and requesting that the Board may be favoured not later than Dec. 31st, 1904, with the outcome of such consideration as may be accorded to the scheme.

The letter was referred to a committee to consider and report.

MEDICINE AND THE LAW.

Byrne v. *Thorne*.

THE action brought by a patient against Miss May Thorne for alleged negligence, whereby a mattress sponge was left in the plaintiff's abdomen at the conclusion of an operation performed by the defendant, was brought to a conclusion now some weeks ago and resulted in a verdict for the plaintiff for £25 damages. All our readers know the circumstances of the case and know also that Miss Thorne received from the medical profession a practical testimony of sympathy in the payment of her damages and costs. But there are aspects of the case which may be further alluded to.

The directions of the learned judge to the jury, the questions left to the latter by him, the damages which were awarded, and the manner in which the finding was delivered

are features in the case which are of general interest from a medico-legal point of view, as the danger of such an occurrence taking place is one to which all surgeons are liable. With regard to this danger a letter from Mr. A. M. Sheild in THE LANCET of June 11th, p. 1684, suggested that mechanical methods may assist the surgeon in ascertaining whether the nurse's or house surgeon's duties have been accurately performed. The suggestion is of importance having regard to the extended responsibility which the recent trial appears to throw upon the surgeon, but Mr. Sheild's views are not shared by many surgeons. All mechanical services are liable to break down, because, after all, they are served by human intelligence. Mr. Justice Bruce told the jury that the point which they had to consider was whether the defendant had been guilty of a want of reasonable care. Skill and care are different things and there was no suggestion of want of skill in this case. The jury had already heard from Mr. H. F. Dickens, K.C., the summary of the law of negligence as applied to medical matters by Chief Justice Erle in Rich *v.* Pierpont,[1] who in summing up the case before him said that the action charged the medical man "with a breach of his legal duty by reason of inattention and negligence and want of proper care and skill" and instructed the jury that if they were of opinion that there had been a "culpable want of attention and care" the medical man would be liable. It was in this judgment that it was laid down that a medical man was not answerable merely because some other practitioner might have shown greater skill and knowledge but that he was bound to have a "competent degree" of both, and that it was not enough in order to make the defendant liable to show that he might have used a greater degree of skill, or even that he might reasonably have employed a higher degree of care. "The question was whether there had been a want of reasonable care and skill to such an extent as to lead to the bad result." In other words, the law in such cases has always been understood to be that the medical man is expected to exercise a reasonable amount of skill and a reasonable amount of care, but that he is not to be held liable to his patient if he did not exercise both or either in the highest conceivable degree, the question what may constitute reasonable skill and reasonable care being for the jury.

In dealing with the facts in the case before him Mr. Justice Bruce dwelt upon the circumstance that although the mistake in counting the sponges was that of the nurse, the counting by the nurse had not been checked before and after the operation by the surgeon, and the absence of this possible precaution evidently weighed with his lordship. The questions left by him to the jury were as follows: (1) Was the defendant guilty of a want of due and reasonable care in regard to the counting or superintending the counting of the sponges? (2) Was the nurse employed by the defendant to assist during the operation? (3) Was the nurse guilty of negligence in counting the sponges? (4) Was the counting of the sponges a vital part of the operation the defendant undertook to perform or to see performed? (5) Was the nurse under the control of the defendant during the operation? With regard to the second and fifth questions it may be observed that they point to a possible liability of the surgeon for the acts of the nurse apart from the performance of his own duties, a liability which has not, so far as we are aware, ever been established. As, however, the first and fourth questions were answered in the affirmative, the second and fifth became superfluous. Mr. Justice Bruce undoubtedly thought that the surgeon ought to make sure for himself, wherever it was reasonably possible for him to do so, not by inquiry but as a matter of personal knowledge, that nothing was left in the patient's body that should be removed before closing the wound, and he guided the jury to an expression of this view in their verdict. The jury considered their verdict for two hours and on their return to court answered all the above questions in the affirmative, adding to their reply to the first a rider that in their opinion the operation was very skilfully performed. With regard to the damages they assessed them at one farthing, a sum which the judge pointed out was inconsistent with answers which attributed negligence to the defendant, and he accordingly declined to accept it from them. The verdict was no doubt, strictly speaking, illogical, as if a defendant has caused injury to a plaintiff by negligence he must be answerable for the natural result of his negligence. Such a finding was not, however, unnatural, nor one altogether unusual where a jury of twelve men try a difficult and complicated issue upon which divergent views may reasonably be held. It was, no doubt, the result of a compromise between those who were of opinion that the defendant had not shown any want of reasonable care, such as to involve liability for negligence, and those who thought that more care should have been taken but who still did not think that the surgeon deserved to incur a heavy pecuniary loss. Evidently large damages were not considered necessary by any, for upon the judge refusing to accept the verdict of a farthing the jury reconsidered the matter and raised the amount to £25 only. This may be taken to show that they considered that the supervision of the counting by the surgeon was a practical precaution the absence of which was to be regretted, but that they did not hold it to be one so imperatively called for or so indicated by custom that its omission would justify the exaction of a heavy penalty. The verdict, in short, showed careful and sympathetic consideration of the case and intelligent appreciation of the difficulty of eliminating all error, combined with the hardship of imposing the responsibility even for an avoidable mistake upon the surgeon.

[1] 3 F. and F. 35.

Public Health and Poor Law.

LOCAL GOVERNMENT BOARD.

REPORTS OF INSPECTORS OF THE MEDICAL DEPARTMENT OF THE LOCAL GOVERNMENT BOARD.

On the General Sanitary Circumstances and Administration of the Romford Rural District and on Prevalence of Diphtheria in Certain Localities therein, by DR. F. ST. GEORGE MIVART.[1]—We are as yet far from possessing any adequate explanation of the local incidence of diphtheria. In any given epidemic it is usually possible to trace opportunities of infection from person to person and sometimes these opportunities are found to have been so numerous that the whole outbreak appears easily to be accounted for. The difficulty, however, remains that the conditions of personal infection which usually seem to be associated with the spread of the disease are common to almost any locality. There is seldom anything in "school influence," unrecognised cases, infected slates, handkerchiefs, drinking cups, and the like which can be considered peculiar to particular neighbourhoods which are frequently and severely attacked by diphtheria; similar opportunities of infection abound in other districts which seem as often to escape epidemics when diphtheria is introduced. It is thus important that the essentially local conditions of diphtheria-infected districts should continue to be studied. The southern part of the Romford rural district, which includes the parishes of Dagenham and Rainham, in recent years has suffered from exceptional prevalence of this disease and in the latter parish, which contains 343 inhabited houses, nearly 200 cases of diphtheria were notified in the course of last year. Opportunities of personal infection were, as usual, numerous and Dr. Mivart deals with the operation of the elementary schools in this direction. He also gives an interesting account of the locality concerned. It forms part of the long stretch of flat country which borders the Thames on the Essex side. Fogs are frequent and the climate is cold, damp, and exposed to east winds. The country is intersected by ditches containing stagnant water and much contaminated by overflows from cesspools and by slop water from the houses. Neither Rainham nor Dagenham is at present sewered. Both have a public water-supply and probably this circumstance increases the nuisance which constantly arises from overflowing cesspools—an evil which the local authority seems to do little to remedy. The most objectionable nuisances in the district, however, are those caused by the great quantities of London manure which are taken by rail to Rainham and Dagenham for use on market gardens and also those due to a very offensive trade, the manufacture of "artificial guano" from fish offal. These conditions occasion an abundance of flies and the possible share of flies in carrying diphtheria through food and in other ways should

[1] London, Eyre and Spottiswoode, East Harding-street; Edinburgh, Oliver and Boyd; Dublin, E. Ponsonby. Price 4d.

not be lost sight of. The relation of the manure and other nuisances to the prevalence of non-diphtheritic sore-throat is another matter to which Dr. Mivart draws attention. It should be observed that the case mortality during the epidemic in 1903 in Rainham was low—less than 3 per cent.—and it would be interesting to know how far this may be attributed to the use of diphtheria antitoxin. In reviewing the condition of the whole of the Romford rural district Dr. Mivart points to a number of objectionable and dangerous sanitary conditions to which the responsible local authority should give immediate attention. The need for supervision of the cowsheds in the place, which supply the London market, seems to be specially great and the contamination of milk in local dairies by means of flies is another important point on which stress is laid. Many of the dwelling houses in Romford seem to be dilapidated and exceptionally damp.

On the General Sanitary Circumstances and Administration of the Whittlesey Urban and Rural Districts, by Dr. S. MONCKTON COPEMAN.[2]—The village and urban district of Whittlesey, with a population of just below 4000, is situated on what was formerly an island in the fen country about six miles south-east of Peterborough. It is mainly a collection of small houses and many of the inhabitants are brickmakers. Dr. Copeman points out a large number of insanitary conditions, several of which could be remedied without much expense by a satisfactory local authority. The most pressing need of the village is a wholesome water-supply and apparently this could be secured at a comparatively small cost, either by extension of the Peterborough mains or from the Wisbech waterworks. The district, however, has a local Act by which no greater rate than 3*s.* 6*d.* in the pound can be raised in any one year without the sanction of a town's meeting and the inhabitants have hitherto invariably refused to sanction any additional rating for water or for other sanitary purposes. It is to be hoped that this attitude will be changed now that Dr. Copeman has shown the feasibility of a satisfactory scheme of water-supply, which is needed also for certain villages in the adjoining rural district.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In 76 of the largest English towns 8748 births and 4793 deaths were registered during the week ending July 30th. The annual rate of mortality in these towns, which had been 13·5, 13·7, and 14·1 per 1000 in the three preceding weeks, further rose last week to 16·4 per 1000. In London the death-rate was 16·0 per 1000, while it averaged 16·5 per 1000 in the 75 other large towns. The lowest death-rates in these towns were 2·6 in Smethwick, 4·5 in Hornsey, 7·0 in King's Norton, 7·4 in Northampton, 8·0 in Rotherham, and 8·7 in Croydon and in Handsworth, Staffs; while the highest rates were 22·1 in West Ham, 22·6 in Birmingham, 24·7 in Rhondda, 25·8 in Stockport, 27·1 in St. Helens, and 29·8 in Liverpool. The 4793 deaths in these towns last week included 1255 which were referred to the principal infectious diseases, against 500, 506, and 792 in the three preceding weeks; of these 1255 deaths, 947 resulted from diarrhœa, 156 from measles, 57 from whooping-cough, 35 from diphtheria, 33 from scarlet fever, 22 from "fever" (principally enteric), and five from small-pox. No death from any of these diseases was registered last week in Hornsey, Hastings, Bournemouth, King's Norton, Smethwick, or West Hartlepool; while the highest death-rates from the principal infectious diseases were recorded in West Ham, Leyton, Birmingham, Aston Manor, Nottingham, Stockport, Liverpool, Bootle, and St. Helens. The greatest proportional mortality from measles occurred in Hanley, Grimsby, Birkenhead, St. Helens, Huddersfield, and Hull; from scarlet fever in Great Yarmouth and Barrow-in-Furness; from whooping-cough in Burton-on-Trent and St. Helens; from diphtheria in Reading; and from diarrhœa in Tottenham, West Ham, Leyton, Birmingham, Aston Manor, Nottingham, Stockport, Liverpool, and Bootle. The mortality from "fever" showed no marked excess in any of the large towns. Of the five fatal cases of small-pox registered in these towns last week, two belonged to London and one each to Warrington, Manchester, and Newcastle-upon-Tyne. The number of small-pox patients in the Metropolitan Asylums hospitals at the end of last week was 46, against 71, 62, and 51 at the end of the three preceding weeks; seven new cases were admitted during the week, against ten, seven, and six in the three preceding weeks. The number of scarlet fever cases in these hospitals and in the London Fever Hospital, which had been 1685, 1698, and 1754 on the three preceding Saturdays, had increased to 1784 on Saturday last, July 30th; 243 new cases were admitted during the week, against 269, 229, and 234 in the three preceding weeks. The deaths in London referred to pneumonia and diseases of the respiratory system, which had been 135, 155, and 120 in the three preceding weeks, fell again last week to 118, but were eight above the number in the corresponding period of last year. The causes of 50, or 1·0 per cent., of the deaths registered in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Bristol, Leicester, Nottingham, Salford, Leeds, Newcastle-upon-Tyne, and in 45 other smaller towns; while the largest proportions of uncertified deaths were registered in Birmingham, Sheffield, Liverpool, Bootle, and Manchester.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 15·8, 14·8, and 15·7 per 1000 in the three preceding weeks, declined to 14·1 per 1000 during the week ending July 30th, and was 2·3 per 1000 below the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 9·0 in Greenock and 10·8 in Aberdeen to 16·6 in Dundee and 19·9 in Paisley. The 466 deaths in these towns included 24 from diarrhœa, 19 from whooping-cough, seven from measles, four from "fever," two from scarlet fever, and two from diphtheria. In all, 58 deaths resulted from these principal infectious diseases last week, against 64, 53, and 68 in the three preceding weeks. These deaths were equal to an annual rate of 1·8 per 1000, which was 2·5 per 1000 below the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of diarrhœa, which had been 20, 19, and 23 in the three preceding weeks, were 24 last week. 13 occurred in Glasgow, three in Dundee, and three in Aberdeen. The deaths from whooping-cough, which had been 24, 21, and 22 in the three preceding weeks, fell to 19 last week, and included 12 in Glasgow and three in Edinburgh. The fatal cases of measles, which had been six and 12 in the two preceding weeks, fell last week to seven, of which four occurred in Edinburgh. The deaths from scarlet fever, which had been two and three in the two preceding weeks, were two last week. These two deaths were registered in Glasgow. The fatal cases of "fever," which had been three in each of the two preceding weeks, were four last week, of which two occurred in Dundee. The deaths referred to diseases of the respiratory organs in these towns, which had been 88, 49, and 75 in the three preceding weeks, fell last week to 55, and were 44 below the number in the corresponding period of last year. The causes of 13, or more than 3 per cent., of the deaths in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 17·9, 19·3, and 17·5 per 1000 in the three preceding weeks, rose again to 17·9 per 1000 during the week ending July 30th. During the past four weeks the death-rate has averaged 18·2 per 1000, the rates during the same period being 14·2 in London and 14·4 in Edinburgh. The 130 deaths of persons belonging to Dublin registered during the week under notice showed an increase of three over the number in the preceding week and included 12 which were referred to the principal infectious diseases, against ten, 18, and 15 in the three preceding weeks; of these, four resulted from measles, four from diarrhœa, two from whooping-cough, one from "fever," and one from diphtheria, but not any from small-pox or scarlet fever. The 12 deaths were equal to an annual rate of 1·7 per 1000, the death-rates last week from the principal infectious diseases being 4·1 in London and 1·6 in Edinburgh. The fatal cases of measles, which had been

[2] Ibid., price 4*d*

two, ten, and five in the three preceding weeks, declined again last week to four. The deaths from diarrhœa, which had been five, two, and five in the three preceding weeks, declined to four last week. The fatal cases of whooping-cough, which had been three in each of the two preceding weeks, were again two last week. There was one death from "fever," as against two in the preceding week. The 130 deaths in Dublin last week included 35 among children under one year of age and 18 among persons aged 60 years and upwards; the deaths of infants showed a considerable increase, while those of elderly persons were fewer than in any week during the present year. Six inquest cases and four deaths from violence were registered; and 50, or over 38 per cent., of the deaths occurred in public institutions. The causes of seven, or nearly 6 per cent., of the deaths registered in Dublin last week were not certified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Fleet Surgeon R. Miller to the *Terror* on recommissioning and for Bermuda Yard. Surgeons: J. C. Durston and G. E. Duncan to the *President* for hospital course.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel G. T. Trewman, half-pay, retires on retired pay (dated August 3rd, 1904). Major R. H. Clement retires on retired pay (dated August 3rd, 1904). Major G. B. Russell retires on retired pay (dated August 3rd, 1904). Major L. R. Colledge retires on retired pay (dated August 3rd, 1904). Major S. Butterworth retires on retired pay (dated August 3rd, 1904). Captain H. H. Norman is placed on temporary half-pay on account of ill-health (dated July 25th, 1904).

IMPERIAL YEOMANRY.

Oxfordshire (Queen's Own Oxfordshire Hussars): Archibald Henry Hogarth to be Surgeon-Lieutenant (dated July 30th, 1904).

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Captain W. A. Atkinson to be Surgeon-Major (dated July 23rd, 1904). Surgeon-Lieutenant J. R. Williams to be Surgeon-Captain (dated July 20th, 1904). Captain A. R. Badger, Worcester and Warwick Bearer Company, Royal Army Medical Corps Volunteers, to be Surgeon-Captain (dated August 3rd, 1904).

VOLUNTEER CORPS.

Royal Garrison Artillery (Volunteers): 1st Cornwall (Duke of Cornwall's): Edwyn Graved Andrew to be Surgeon-Lieutenant (dated July 30th, 1904). 2nd Hampshire: Surgeon-Lieutenant-Colonel G. G. Sparrow resigns his commission and is granted the honorary rank of Surgeon-Colonel, with permission to wear the prescribed uniform (dated July 30th, 1904).

Rifle: 3rd Volunteer Battalion the Devonshire Regiment: Surgeon-Lieutenant E. R. Tweed to be Surgeon-Captain (dated May 15th, 1904). 5th (The Hay Tor) Volunteer Battalion the Devonshire Regiment: Surgeon-Major E. Haydon resigns his commission and is granted the honorary rank of Surgeon-Lieutenant-Colonel, with permission to wear the prescribed uniform (dated July 30th, 1904). 1st Volunteer Battalion the Suffolk Regiment: Brigade-Surgeon-Lieutenant-Colonel G. S. Elliston is seconded whilst holding the appointment of Senior Medical Officer of the Harwich Volunteer Infantry Brigade (dated July 30th, 1904). 2nd Volunteer Battalion the Worcestershire Regiment: Surgeon-Lieutenant H. B. Emerson resigns his commission (dated July 30th, 1904). 1st Volunteer Battalion the Duke of Cornwall's Light Infantry: Surgeon-Lieutenant F. Chown to be Surgeon-Captain (dated July 30th, 1904). 1st Volunteer Battalion the King's (Shropshire Light Infantry): Surgeon-Major F. K. Pigott to be Surgeon-Lieutenant-Colonel (dated July 30th, 1904). 1st Herefordshire: Surgeon-Major J. W. Hinings resigns his commission and is granted the honorary rank of Surgeon-Lieutenant-Colonel, with permission to wear the prescribed uniform (dated July 30th, 1904).

DEATHS IN THE SERVICES.

Staff Surgeon Henry Scanlan, R.N. (retired), at Kerswell, Broadclyst, Devonshire, on July 31st, aged 55 years. He entered the Royal Navy as surgeon in 1872, became staff surgeon in 1884, and retired in 1885. He served with the Royal Marine Battalion at Suakin during the operations in the Eastern Sudan in 1884–85. (Egyptian medal and clasp and Khedive's bronze star.)

THE NEW ARMY SCHEME.

Mr. Arnold-Forster's new army scheme will probably come before the House of Commons for discussion again on Monday next, when it may be hoped that some further information will be afforded and some additional light will be thrown upon the exact nature and extent of the new proposals.

MALTA FEVER.

We learn from India that a special commission is investigating Malta fever, the occurrence of which in India is becoming more recognised. A special committee is also investigating anti-typhoid inoculation.

FIFTY YEARS' MEDICAL SERVICES TO THE RUSSIAN FLEET.

The 20th of July was the fiftieth anniversary of Dr. V. S. Kudrina's official services as Chief Medical Inspector to the Russian Fleet and the occasion was taken by the Military Medical Academy to present him with a congratulatory address.

THE WAR IN THE FAR EAST.

Denatured spirit is finding a use at the seat of war. The chief Russian Military Medical Council has acquired a number of spirit lamps for the field hospitals fitted with special burners and giving a clear light. A parcel of these lamps has already been sent to the Manchurian army.

Lieutenant-General Linivitch says that he visited on July 24th the Nijnigorod and the Nijninovgorod hospitals at Chabarovsk in the Far East and found everything there a pattern of order and comfort. The hospitals are luxuriously furnished. He feels it his duty to thank the two towns on behalf of the army under his orders and to convey to the towns interested the expression of satisfaction their generosity has caused the soldiers. He gives unstinted praise to the staff, especially the two chief medical officers, Dr. Kossereff and Dr. Oschmana. General Kuropatkin, likewise, writes in praise of the Red Cross arrangements, especially mentioning the efficiency of the hospital furnished by the Kharkoff Zemstvo (local council) which he had personally visited between Lyao-yang and Saimatze.

The members of the St. Petersburg Society of Dental Doctors are arranging with their provincial colleagues with the object of opening at their common expense dental consulting and operating-rooms for the army in Kharbin, Mukden, Lyao-yang and other depôts of the Manchurian army.

The situation in the Far East changes from day to day, and we may at any moment hear of some great and striking success on one side or the other which may alter the aspect of the war. There has been heavy fighting south of Haicheng and at the present time the Japanese field forces are making a great and general advance; three of their armies are engaged and the Russians are probably hard pressed, while the position at Port Arthur has entered upon a very acute and perhaps final stage. As regards the general sweeping movement of the Japanese armies almost everything now depends on the success or failure of the first army in closing the net from the north-east. General Kuropatkin's position must be causing keen anxiety at St. Petersburg at the present time. The first official announcement from Tokio regarding the siege operations was made at the end of last month when the general staff announced that five officers had been killed and 41 wounded in the then recent fighting around Port Arthur, but the losses in men were not stated. As far as can be gathered from non-official reports all the public buildings inside Port Arthur are used as hospitals. The sick and wounded are stated to be well cared for by volunteer nurses. The wounds inflicted by the Japanese rifle fire are described as not dangerous except in vital spots. Hundreds of men after being badly wounded have quickly recovered and are now back in the firing line. The latest reports of the progress of the siege are not only very meagre but contradictory and untrustworthy. The Russian casualties at the battle of Tashichao are estimated by General Oku at 2000, while those of the Japanese in the entire engagement are put down at 1000, but little reliance can, as a rule, be placed in estimates formed in this way during a war. It is stated that there is much dissatisfaction in Russia at

the relative absence of information as to the extent of the losses. According to a war correspondent of the *Standard* a foreign merchant has arrived at Chifu who left Kharbin on July 22nd last and reports that during the last five weeks a very large number of Russian troops had arrived and were still arriving there. They were well provisioned; grain was plentiful, the Russians paying good prices for it to the Chinese. There were many wounded at Kharbin but there are excellent accommodation for them and ample medical comforts. The Japanese prisoners have been sent to Tomsk where they are treated excellently. The railway is working well, though slowly.

Correspondence.

"Audi alteram partem."

LAYMEN AND ELECTRICAL TREATMENT.

To the Editors of THE LANCET.

SIRS,—There are at least two sides to the question raised by "Fair Play" in THE LANCET of July 23rd. Amongst the reasons which lead many members of the profession to send their patients to laymen for treatment by electricity the following would, I think, occupy an important place. First, the expense. There are very few patients who care to pay a guinea, or even half a guinea, per *séance* for electrical treatment, possibly of many weeks' duration, or to pay from three to ten guineas for a skiagram. Secondly, a medical man who thinks electrical treatment may be useful or at least worth trying in a particular case perhaps after he has exhausted other plans of treatment would often shrink from having his diagnosis and ideas of treatment overhauled by another practitioner.

It is surely absurd to contend that there can be anything harmful to a patient in getting a skilled layman to skiagraph him for diagnostic purposes, although no doubt special anatomical knowledge is occasionally needful to interpret what is seen. Again, "Fair Play" can hardly think that it is difficult for any skilled electrician who has an elementary knowledge of anatomy to apply galvanism or even high-frequency or static currents in a case, say, of sciatica, or to use the slowly interrupted faradic current in one of atony of the abdominal muscles. I certainly think we should be careful to avoid sending our patients to the class of people who pose as "healers" or who prefer to act apart from medical men. As a possible compromise I would suggest that the medical men who practise entirely in electro-therapeutics might employ nurses or other skilled assistants who could work under their supervision at a much smaller fee than they themselves are obliged to charge.

I am, Sirs, yours faithfully,

Wimpole-street, W., July 26th, 1904. E. STANLEY SMITH.

To the Editors of THE LANCET.

SIRS,—Apropos of the remarks made by "Fair Play" it is my firm belief that many men taking up electro-therapeutics will when fully qualified refuse to register. They will do so because if unregistered they will be assured of the support of their registered friends and can at the same time compete on an equal footing with the lay institutes in the matter of advertising, &c. It is my experience that the generality of practitioners look upon electrical treatment as bordering on quackery. They do so because the bulk of the work is done by laymen who, by business-like methods, attract the public and force the medical man's hand.

I am, Sirs, yours faithfully,

H. VALENTINE KNAGGS.

Camden-road, N.W., July 26th, 1904.

THE SCOTTISH POOR-LAW MEDICAL SERVICE.

To the Editors of THE LANCET.

SIRS,—While thanking you for your very kind congratulations on the successful settlement of my actions against the parish council of Durness I desire, with your permission, to put on record my high appreciation of the able and resolute manner in which the Medical Defence Union of London and its solicitors (Mr. Hempson, London, and his Edinburgh agents, Messrs. Inglis, Orr, and Bruce, W.S.) have conducted this case to so satisfactory and successful a termination. It is, I believe, the first case of its kind in Scotland since the passing of the Local Government (Scotland) Act, 1894, which established parish councils in place of the parochial boards and I trust that it may tend to hasten much-needed legislation which will amend the aforesaid Act by giving to the parochial medical officers of Scotland a right of appeal against capricious or unjust dismissal by their parish councils, so placing the Scottish Poor-law medical officers on a similar footing with their professional brethren in England and in Ireland. I also desire to express my thanks to Mr. W. L. Muir, the energetic secretary of the Scottish Poor-law Medical Officers' Association, who writes to me as follows: "You are to be congratulated on the result and the Medical Defence Union (London), of which you most fortunately are a member, are entitled to the thanks of the whole Scottish Poor-law medical staff."

I am, Sirs, yours faithfully,

JAMES F. D. MACARA, M.B., C.M. Glasg.

Durness, Sutherlandshire, N.B., July 26th, 1904.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

The University of Liverpool: the King's Visit to Liverpool.

ON the occasion of the visit of the King and Queen to Liverpool on July 19th Dr. A. W. W. Dale, the Vice-Chancellor of the University of Liverpool, was presented to His Majesty by the Earl of Derby and read a loyal address from the University, in which the gratitude of the governing body was expressed at the royal charter which had been granted to it. The King, in reply, said that it was a source of sincere gratification to him to have been able to grant the charter to the University. Though the period which had elapsed since the granting of the charter had been but short the efforts made for the advancement of knowledge by the authorities were deserving of the highest eulogy and would ultimately, he did not doubt, be rewarded by results worthy of so great a city.

Death from Anthrax by Inhalation.

A labourer at the Mersey Docks and Harbour Board's wool warehouse in Great Howard-street, aged 62 years, returned home on July 19th and his wife noticed a small pimple on the left side of his lower lip which she considered to be a "blind boil." On the following day the man induced a barber who was shaving him to cut the point of the pimple. Later in the day the barber gave him some ointment to apply to it. On the 21st the sufferer's face was swollen, but he went to his work nevertheless and experienced no pain. In the afternoon of the same day the keeper of the wool warehouse, though not suspecting the ailment, induced the sufferer to go to the David Lewis Northern Hospital where it was found that he was suffering from anthrax. The face and the neck continued to swell and he died on the 24th. An inquest was held by the city coroner and a verdict of "Death from anthrax" was recorded. Dr. White, one of the house surgeons at the hospital, deposed that the surgeons recognised that the deceased was suffering from anthrax when he was admitted. There was an ulcer on the face and the face was considerably swollen. The anthrax organism was found at the part where the pimple had been. As the result of an operation the swelling was entirely removed and on the next morning the deceased was better. On the night of the 23rd, however, he became rapidly worse and died on the following morning after experiencing acute abdominal pain. A post-mortem examination revealed a number of ulcers in the stomach which probably indicated internal anthrax. The stomach was at the time under microscopical examination, but he had no doubt whatever that death was due to anthrax. Mr. R. E. Graves, H.M. inspector of factories, who was present at the inquest, stated that this was the first fatal case from the inhalation of the germs of anthrax in Liverpool and he looked upon the stomach ulceration as important. Mr. Graves said that Dr. T. M. Legge of the Home Office, who was in court, had informed him that he had brought with him some serum which had been successfully used in other countries by way of injection against this disease and he was endeavouring to get it adopted by the

medical profession in this country. It had had the effect of reducing the number of fatal cases. Dr. Legge intended to visit some of the hospitals in reference to the use of the serum.

The Renewal of the Lease of the Liverpool Medical Institution.

The question of the renewal of the lease of the Medical Institution (for which the estate committee of the corporation required £817) which had been a source of much anxiety to the trustees and council of the society for several months has at length been satisfactorily arranged. In 1880, when 40 years of the lease had expired, the appointment of new trustees to the institution owing to deaths had become necessary, and the council of the society applied to the corporation for a renewal of the lease free of fine as before. The application was granted at a peppercorn rent. However, a few weeks later the council of the society was informed by the town clerk for the time being that he considered it technically necessary to obtain the consent of the Lords of the Treasury prior to issuing the new lease, as it was proposed to grant it without fine. The Lords of the Treasury replied that they did not feel justified in giving their consent to the application as the lease would not have run out until 1915 and that no grievance could arise until then. In the meanwhile no action need be taken. On April 10th, 1902, the trustees of the society waited upon the estate committee of the city council, and in reply to an application for a renewal of the lease without fine they received the astounding intimation that a fine of £817 4*s.* would be required. This action of the estate committee was difficult to reconcile with the attitude of the corporation in 1881. A second deputation of the society waited on the estate committee later but without satisfactory result. Mr. T. H. Bickerton, the late treasurer of the institution and one of the vice-presidents, took the matter up warmly and read a most elaborate paper before the society on the History of the Liverpool Medical Institution in Special Relation to the Question of the Lease, in which he pointed out the admirable work which the society performed in the spread of specialised knowledge calculated to alleviate human suffering and to benefit the community at large. To his exertions and the sympathetic attitude of the town clerk the institution is indebted for the reduction of the demand made from £817, for the renewal of the lease for 75 years, to the nominal fine of ten guineas.

University of Liverpool: Admission of Graduates: Appointment to Fellowships.

On July 26th the third ceremony of admission to degrees took place in the Arts Theatre of the University. Amongst graduates of other faculties 16 gentlemen were admitted to medical and surgical degrees by the Vice-Chancellor, Principal Dale. Including admissions made on that day the Vice-Chancellor stated that of their Victoria graduates those who had actually taken advantage of the offer to become graduates of Liverpool the number was 342, of whom 307 had presented themselves in person, while 35 resided abroad and were admitted by special concession in their absence. What the Senate was trying to do was, so to speak, to build into the new fabric the stones belonging to the old one. The Gee fellowship on human anatomy was awarded to Dr. Hubert Gordon Thompson, the Johnston colonial fellowship to Dr. H. E. Roaf, the Ethel Boyce fellowship in gynæcology to Mr. E. Emrys Roberts, the Holt fellowship in pathology to Mr. H. Pierpoint, the Thelwall Thomas fellowship in surgical pathology to Dr. E. Cleaton Roberts, and the Stopford-Taylor fellowship in dermatological research to Dr. F. P. Wilson. Mr. P. Hick and Mr. F. R. Tickle were respectively awarded the Derby exhibition and the senior Lyon Jones scholarship.

Bequests to Liverpool Charities.

The late Miss Anne M. B. Hornby of Wavertree has bequeathed £500 to the Children's Infirmary and £100 each to the Woolton Convalescent Institution and the Nurses' Home, Dover-street.

August 1st.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

Pauperism in South Wales.

STATISTICS relating to the amount and cost of pauperism in South Wales and Monmouthshire have recently been issued by Mr. F. T. Bircham, the Poor-law inspector of the Local Government Board. The population of this district in 1901 was 1,546,100, an increase of 221,054 over that recorded in 1891. In the whole of England and Wales 2·2 per cent. of the population were in receipt of parish relief on Lady Day, 1904, while on the same date in the six counties of South Wales and in Monmouthshire 2·7 per cent. of the population were being relieved, compared with 2·6 per cent. in March, 1903, and 2·5 per cent. in 1894. The lowest rate of pauperism was in the Bridgend Union—1·5 per cent.—and the highest in the Carmarthen Union—3·8 per cent. The cost of maintaining the indoor and outdoor paupers in the Bridgend Union was equal to 2*s.* 5½*d.* per head of the population and in the Carmarthen Union 6*s.* 6½*d.* In the Pontypridd Union the cost was 2*s.* 7½*d.*, in Cardiff 3*s.* 9½*d.*, and in Merthyr Tydvil 4*s.* 8*d.*

Public Abattoir for Dartmouth (Devon).

The Local Government Board inspector (Mr. E. A. S. Fawcett) recently held an inquiry into the application of the Dartmouth town council for permission to borrow £1050 to erect a public abattoir, about a mile from the town, on the summit of a hill. There was no objection raised to the proposal.

The Water-supply of Ilfracombe.

The new water-supply, which has been obtained for Ilfracombe from Exmoor at a cost of £55,000, was formally opened on July 27th by Lord Ebrington, the Lord-Lieutenant of Devonshire, in the presence of a large gathering.

The Winsley Sanatorium.

At the meeting of the Bristol city council, held on July 26th, it was decided, in consequence of some conditions laid down by the Local Government Board, to extend the period of time which the council will subscribe £1300 from one year to five years. The council, in addition, has also given £5000 towards the construction of the sanatorium. It is hoped that the institution will be opened in November and the Bath city council at its meeting on July 26th, on the proposition of the mayor, passed a motion asking the executive committee of the sanatorium to make special efforts to obtain the gracious consent of King Edward to perform the opening ceremony.

Celluloid Bound Bibles.

One of the Cardiff magistrates has provided for the use of the borough police-courts copies of the Bible bound in celluloid covers which can be readily cleaned. It is very rarely that a witness in the South Wales police-courts asks to have the Scotch form of oath administered.

The Three Counties Asylum, Carmarthen.

Upon their last visit to the Carmarthen Asylum the Lunacy Commissioners reported that there were 21 men and 13 women in the institution in excess of the proper numbers and suggested certain alterations in the old isolation hospital to make it in a fit condition for the permanent occupation of an increased number of patients. A dispute has been going on for many years as to the proportions of the contributions to be made to the asylum committee by the county councils of Cardigan, Carmarthen, and Pembroke and it was decided by the committee of visitors on July 28th that no matter entailing a large expenditure of money should be considered until the matters in dispute have been settled.

August 1st.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Dispensary Medical Officers.

THE salaries of the Poor-law dispensary medical officers in Ireland are notoriously insufficient, but the trouble caused by the careless issue of tickets, through which the medical officers are obliged to attend patients gratis under pain of dismissal, ranks in some districts as chief among the grievances. The "red ticket" is the chief cause of trouble, as the medical officer is expected to regard this ticket as an urgent command to visit a poor patient at his or her home. A recent example was brought before the Local Government Board and has been transmitted to the guardians of the Monaghan union. Mr. M. Halpenny, medical officer of Scotstown dispensary district in that union, requested that a "red ticket" forwarded to him should be cancelled on the ground that the woman whom he was thereby forced to attend was the wife of a rated occupier of

a farm of 25 statute acres for which the farmer pays rent and taxes and possesses a vote. The woman was described on the "red ticket" as a labourer's wife. The guardians at their meeting on June 27th refused to cancel it; hence the action of the Local Government Board in transmitting the medical officer's letter to them. They have again postponed the matter. It would seem a gross case.

The late Dr. John Joseph Cranny.

The death of Dr. John J. Cranny of 17, Merrion-square, Dublin, is much to be regretted. He was widely known and very popular in the city, where his death at the comparatively early age of 59 years is keenly felt by the many friends who knew him and recognised his high qualities as a philanthropist and physician. He was the owner of considerable propery in the Pembroke township where he represented for some years a district at the council board. Dr. Cranny, who was a most charitable and retiring man, was an M.D. of the University of Dublin, Fellow and member of council of the Royal College of Surgeons in Ireland, surgeon to Jervis-street Hospital and to the Orthopædic Hospital, and consulting physician to the Royal Hospital for Incurables.

An Honorary Degree for Sir John W. Moore.

On July 28th the degree D.Sc. *honoris causâ* of the University of Oxford was conferred on Sir John William Moore, late President of the Royal College of Physicians of Ireland, Professor Love, in presenting him to Convocation, said that the University welcomed in him a representative of the sister University of Dublin.

The Belfast Hospital for Skin Diseases.

At the annual meeting of the supporters of this hospital held on July 30th it was reported that during the year 926 patients had been treated and that the balance to the credit of the institution was £271 15*s.* 10*d.* The necessity of an improved Finsen lupus lamp was emphasised.

Ireland's Declining Population.

The returns just issued of births, marriages, and deaths in Ireland for the ten years 1891-1900 are very unsatisfactory. The population has diminished from 4,630,376 to 4,468,501—that is, there was nearly a quarter of a million fewer people in Ireland in 1900 than in 1891. In 60 years the population has declined from over eight millions to less than four and a half. The tendency to a decline in the birth-rate, which has become so marked in England, has also spread to the sister country, for the total number of births registered during the ten years was 1,055,020 as compared with 1,150,463 for the previous decade, being 95,443 (or 8·3 per cent.) less. The deaths during this decade were 836,035, as compared with 883,156 for the previous ten years, thus showing a decrease of 47,121 (or 5·3 per cent.), but an increase in the average annual death-rate from 17·9 in the earlier to 18·2 per 1000 living in the later period. It will be thus seen, looking at the diminished birth-rate and the increased death-rate, that the margin of national increase is rapidly declining. Meanwhile the emigration continues. The number of marriages registered during the period of these ten years was 221,608, or at the average rate of 4·84 per 1000 of the mean population, and there is a well-marked decrease in early marriages. The number of illegitimate births in Ireland (always exceedingly small and contrasting in this respect markedly with Scotland) shows still further diminution from 2·7 per 1000 in the decennium 1881-90 to 2·0 per 1000 in the decennium 1891-1900. The causes of the dwindling population of Ireland are of great interest but such a discussion is not exactly suited for a medical journal. The influence of education is seen in these statistics, for it appears (looking to the number who "signed their names in writing" as compared with those who signed "by mark" in the marriage registers and certificates) that in 1864 61·4 per cent. of the men and 49·7 of the women signed in writing; in 1871 the proportions were—men 62·5 per cent., women 54·8 per cent.; in 1880, men 73·8 per cent., women 69·1 per cent.; in 1890, men 79·6 per cent., women 79·1 per cent.; in 1900, men 86·8 per cent., women 89·3 per cent. It is a remarkable fact that, while there has been a steady increase in both sexes in the proportion signing by writing, the proportion among women, which was much below that for men in 1864, became equal to the rate for men in 1891 and has each year since exceeded it. It is also curious to note that while in Leinster, Munster, and Connaught, taking the figures for each year of the decade, the married women seem to be better educated than the men, in Ulster the reverse was the case until the year 1900, when 85·5 per cent. of the men and 86·3 per cent. of the women signed their names in writing.

Nuisance by Gasworks.

An important judgment was given in Dublin on July 28th by Mr. Justice Barton. The Belfast corporation was held to have injured a firm of linen merchants by smoke, soot, grime, and colly which issued from the corporation's gas retort-house and injured and soiled linen goods on their premises situated on the opposite side of the street. This looks like opening up a fine field for litigation.

August 2nd.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Epidemiology of Ulcerative Membranous Stomatitis.

AT the meeting of the Academy of Medicine which was held on July 19th M. Kelsch reminded his hearers that ulcerative membranous stomatitis, a disease which not so very long ago was epidemic in the army, only attacked young children and soldiers. This point was an additional instance of the relationship between the pathological sensitiveness exhibited by these two classes. There was a military pathology just as there was an infantile pathology and they were quite comparable. The form of stomatitis in question only appeared in barracks during one century—viz., at the end of the eighteenth century. It remained sporadic until 1820, increased from then up to 1875, and then declined until it entirely vanished with the last years of the century. As regarded the infantile form the course was similar. It was very common and frequently epidemic in the Children's Hospital from 1830 to 1850 but since that date it had only been met with sporadically. M. Kelsch having drawn attention to the oscillations which other diseases undergo, then referred to the specific nature of ulcerative membranous stomatitis. He could only explain it by connecting it with the attacks of sore-throat due to fuso-spirillary bacilli which have been so common of late years and which in his opinion are due to a transformation of the organisms which formerly caused stomatitis of the ulcerative membranous variety.

Gastrostomy for Imperforate Œsophagus.

At the meeting of the Society of Surgery held on July 13th M. Kirmisson read a paper on the case of a newly born child who had been taken to his wards in February of the current year suffering from an imperforate œsophagus. As is commonly the case in such instances of deformity, the œsophagus communicated with the respiratory passages. Within an hour or two of the admission of the child to the hospital M. Kirmisson attempted to perform gastrostomy but the stomach was so distended that it burst under the efforts of the patient. M. Kirmisson sewed the stomach to the abdominal wall, leaving an opening, but the infant shortly died. A post-mortem examination showed the rupture of the stomach had caused free hæmorrhage into the small omentum.

Tuberculosis in Paris.

A new dispensary has just been opened in Paris for the reception of members of the working classes of both sexes who have broken down from overwork and whom tuberculosis is on the watch to attack (*guette*). Over the entrance is inscribed, "*Prévenir, c'est guérir.*" The treatment will consist in overfeeding and rest in the open air. The chief of the dispensary is Dr. Charles Richet.

The New Hospitals.

M. Mesureur, the director of the Assistance Publique, is pushing on the building of the new hospitals as fast as possible. At Aubervilliers one block is already nearly completed. The foundations of the nursing school at the Salpêtrière are dug but the new Pitié Hospital, which is to occupy the site vacated by the Salpêtrière, is scarcely begun, although the plans are definitely decided on. The entrance to the new Pitié Hospital will be in the Boulevard de l'Hôpital, opposite the general stores of the Assistance Publique. Immediately inside the entrance are the reception room and the administrative buildings. Then come the wards. Two are allotted to surgery and two more, opposite to these, to medicine. There is also a maternity block. Later it is intended to build a third medical ward. The nursing

school will be finished in two years and the new Pitié Hospital in four years.

The Absence of "Anaphylaxie" in Man after Repeated Injections of Antidiphtheritic Serum.

At a recent meeting of the Hospitals Medical Society M. Marfan reminded the meeting that in two previous communications M. Arthus had pointed out that although the serum of a horse is not poisonous for a normal rabbit it becomes so for an "unguarded rabbit" (*lapin anaphylactisé*) that is to say, for a rabbit which has been rendered hypersensitive by a repeated series of injections. After such a series of injections of five cubic centimetres of horse serum an œdematous infiltration is noticed at the seat of the latest injection, together with an aseptic abscess and patches of gangrene. A rabbit which has been rendered hypersensitive by six or eight injections, either given hypodermically or intraperitoneally will sometimes die in a few minutes if given an injection of two cubic centimetres by the vein of the ear. In other cases the rabbit shows acute toxic symptoms which, however, pass off for the time being, but the animal gradually becomes more and more cachectic and dies in a few weeks. A wide experience of injections of antidiphtheritic serum derived from the horse has enabled M. Marfan to state that this state of "anaphylaxie" does not exist in man, at least, in so far as regards hypodermic injections. Although the seat of injections sometimes shows swelling or redness, these phenomena are but transient and occur after one injection just as much as after many. There can be no question here of hypersensitiveness.

August 2nd.

Medical News.

UNIVERSITY OF LONDON.—At examinations held in July the following candidates were successful:—

M.D. EXAMINATION.

Medicine.—Hugh Barber, Guy's Hospital and Victoria University; Helen Beatrice Hanson, London (Royal Free Hospital) School of Medicine for Women; Arthur Charles Hasiam, St. Thomas's Hospital; Septimus M. Hebblethwaite, St. Bartholomew's Hospital; Norris Norman A. Houghton, Guy's Hospital; Colin Dunrod Lindsey, St. Mary's Hospital; John Ford Northcott, Guy's Hospital; Claude Rundle, St. Mary's Hospital; and Richard Hamilton Townend, London.

Mental Diseases and Psychology.—William Ferris, B.S., St. Mary's Hospital.

Midwifery and Diseases of Women.—James Cole Marshall, St. Bartholomew's Hospital; Richard Drummond Maxwell, London Hospital; Thomas Massey Pearce, St. Bartholomew's Hospital; and George Struan Robertson, Guy's Hospital.

State Medicine.—Myer Coplans, University College and Guy's Hospital.

M.S. EXAMINATION.

William Henry Bowen, Guy's Hospital; David Leighton Davies, M.D., University College; Walter Fedde Fechlen, St. George's Hospital; Sydney Richard Scott, St. Bartholomew's Hospital; and Robert Gordon Strange, St. Thomas's Hospital.

UNIVERSITY OF EDINBURGH.—The following is the official list of passes at the recent professional examinations for degrees in medicine and surgery:—

First Professional Examination.—James Aiken, H. M. Anderson, A. H. T. Andrew, William Bainbridge, Alexander Baldie, Christina H. Barr, Margaret W. Bartholomew, Lydia D. la Trobe Bateman, Elizabeth M. A. Baxter A. R. Bearn, James Black, John Brander, Sarah E. Buyers, Ellison Cansfield, J. T. Carson, Jean G. Cathels, P. H. Chauvin, D. G. Cooper, H. S. Cormack, F. G. Cowan, J. C. Craig, M.A., W. S. Crawford, Emilee C. Creaser, J. M. Dalrymple, Purser Davies, F. Dillon, A. E. Drynan, A. C. England, Cromwell Gamble, Thomas Gardner, Michael Gavin, Alexander Gibson, M.A. (with distinction), John Gilchrist, A. I. Girdwood, J. A. Gordon, A. T. Gowan, J. C. B. Grant, Robert Hannah, John Hewat, A. E. Huckett, P. F. Hugo, J. D. Ingram, K. R. K. Iyengar, Andrew Jamieson, J. A. Jamieson, F. E. Jardine, W. P. S. Johnson, R. Q. Jollie, E. W. Kirk, Robert Krause, F. R. Laing, C. L. Laurent, R. D. Laurie, H. R. Lawrence, D. C. Lee, Margaret M. Lindsay, V. D. O. Logan, G. H. Lowe, Robert M'Adoo, Margaret M'Cahon, Alexandra B. MacCallum, Ranald MacDonald, R. F. D. MacGregor, D. L. MacKenna, Kenneth Mackenzie, A. K. Maclachlan, W. M. Macnab, David Macnair, John Malloch, John Marshall (with distinction), Eva Meredith, W. A. Miller, A. R. Milroy, J. A. Mitchell, V. P. Mondon, F. L. Moore, Anna L. Muncaster, William Murdie, M.A.; C. C. Murray, C. T. Newton, I. A. van Niekerk, A. C. Norman, C. A. Paterson, A. P. Pearson, J. H. Peck, H. R. A. Philp, Laura W. Pugh, F. W. Rayment, F. E. Reynolds, E. W. Richards, Charles Robertson, B.A., Marguerite Ross, Samuel Rowlands, D. H. Russell, C. S. Sandeman, W. A. Scobie, John Scott, R. L. Scott, Wilhelmina Sievwright, B.A., J. C. Simpson, J. T. Simson, E. W. Smerdon, Thomas Smyth, W. N. van Someren, J. E. Spence, R. H. Tait, J. J. Thomson, N. G. Thornley, Raymond Verel, F. H. de Villiers, A. A. Walbrugh, Dora M. Walker, E. A. Walker, W. O. Walker, L. E. B. Ward, W. H. te Water, F. W. Waterworth, A. P. Watson, M.A.; H. B. Watson, M.A., N. J. Watt, H. L. Watson Wemyss, E. V. Williams, Gordon Wilson, A. G. Yates, M.A., and W. A. Young.

Second Professional Examination.—G. P. Adshead, John Alexander, M.A., Alfred Arthur, A. F. Babonau, Ernest Banks, Frank Blamire, J. D. Bowie, H. F. Briggs, Alice M. Burn, Edward Burnet, B.A., W. P. Chrystall, J. A. Currell, J. S. Daniell, Richard Davidson, J. D. C. Duncan, J. S. Edwards, Mary S. Finlayson, F. S. B. Fletcher, K. N. Ghosh, J. E. Gordon, E. R. Grieveson, B.A., D. K. Henderson, W. M. P. Henderson (with distinction), Nettie D. Hendrie, J. M'Adam Hill, A. S. Holden, Spencer Jackson, W. W. Johns, W. T. A. Jolly (with distinction), R. Lloyd Jones, Beatrice Kippenberger, J. H. Lamb, S. B. Legge, John M'Cutcheon, A. T. M'Donald, George M'Mullan, W. J. Macnab, A. S. Mactavish, L. R. H. P. Marshall, A. H. M. Maxwell, J. E. Murray, Janet M. Murray, M.A., Meher A. D. Naoroji, A. J. P. Nowell, A. S. Paterson, Edith G. Pycroft, G. Y. Richardson, W. R. Ridley, W. G. Rivers, Graham Robertson, Thomas Robertson, W. O. Sclater (with distinction), H. L. Sells, Subrata Chunder Sen, E. D. Simson, R. St. C. Steuart, J. A. Taylor, E. W. Vaughan, A. S. Walker, and F. E. Wall.

Third Professional Examination.—Mukhtar Ahmed Ansari, A. W. Atkinson, A. J. Beattie, E. J. Black, Norman Black, James Brennan, Gilbert Britto, T. Graham Brown, B.Sc., J. S. Caldwell, Thomas Campbell, N. S. Carmichael, John Chisholm, F. W. Cragg, Davidina R. J. Davidson, E. G. Deverell, F. H. Dickson, M. G. Dill, James Dundas, David Eakin, H. F. Fenton, L. P. M. Gardner, H. S. Gaskell, E. G. Girdwood, J. A. Glover, M.A., E. J. C. Groves, J. T. Gunn, H. S. A. Hogg, G. H. Howe, J. H. Hume, J. F. James, J. R. Kerr, R. M. Liddell, John Lindsay, J. A. Loughridge, Peter M'Dermid, D. F. Mackenzie, William Magill, W. J. Maloney, J. A. Mathers, F. C. Mills, M.A., Harold Mowat, R. E. Moyes, E. B. Munro, R. E. U. Newman, R. H. Nolan, H. J. Norman, C. R. O'Brien, J. S. Orwin, J. L. Pearce, D. E. C. Pottinger, Gustav Raubenheimer, D. G. Reid, H. D. Robb, T. E. Roberts, J. R. Robertson, H. M. Sauzier, J. O. Shircore, E. M. Simmers, Archibald Simpson, W. Torrance Smith, W. J. Taggart, H. V. Taylor, J. H. du Toit, Andrew Wight, Richard Wilkins, C. R. Wills, and J. T. Young.

ROYAL COLLEGES OF PHYSICIANS AND SURGEONS OF EDINBURGH AND FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the July sittings of the Scottish Conjoint Board held in Glasgow the following candidates passed the respective examinations:—

First Examination (five years' course).—Alexander M'Murray, Belfast; John M'Kelvey, Belfast; Ernest Gibson, Cork; William Garfield Forde, Cloyne; Henry William Turner, Glasgow; Osmonde Rashleigh Belcher, Cork; Thomas Baird Ferguson, Kirkmaiden; Frank Humphry Ali Kiddle, Nellore, Madras; Patrick James Taaffe, Liverpool; John George Buchanan, Tiree; David Welsh, Wilsontown; and Karl Frederick Gorer, Demerara.

First Examination (four years' course).—George Vernon Edwards, Kendley, Cheshire.

Second Examination (five years' course).—John Robert Dunn Holtby, Belfast (with distinction); John Arthur Smith, Glasgow; F. Garnet Allan, Whaley Bridge, Cheshire; John Monerieff Muir, Kilmarnock; Joseph Hume Patterson, North Berwick.

Third Examination.—Alexander Brown, Galston; Percival Henderson, Skelmersdale; John Macnamara, County Leitrim; John M'Arthur, Calderbank; John Michael Moriarty, Co. Kerry; William Frank Hague Ives, London; Henry Edward Bolton, Dublin; Joseph Benjamin Norman Raphael-Tom, Trinidad, B.W.I.; and John Hughes Roberts, Bodelern, Anglesea.

Final Examination, and admitted Licentiates of the Three Cooperating Authorities.—James Booth Patterson, Carluke; Archibald Frank Greene Spinks, Southport; Robert Crothers, Banbridge, Ireland; Thomas Graham Campbell, Partickhill; William Arthur Magill, Belfast; George Henry Waugh, Belfast; Llewellyn Charles Nash, New Shildon, R.S.O., Darlington; Percy James Thomson, L.D.S., Glasgow; Thomas Arthur Fall, Partick; Henry Edward Strathy, Pitlochry; Reginald William Townley, Oswaldtwistle, Lancs.; Mathias Antonio Ligoria dos Santis Vaz, Edinburgh; John Hutchison Fyfe, L.D.S., Glasgow; Laurence Gavin, Edinburgh; and David Haig, Springburn.

CONJOINT EXAMINATIONS IN IRELAND BY THE ROYAL COLLEGE OF PHYSICIANS AND THE ROYAL COLLEGE OF SURGEONS.—At the final examination the following candidates satisfied the examiners:—

With Honours.—James S. Sheill.

Passed in All Subjects.—Miss Alice M. Barry, Mathew Campbell, William J. Cowell, Michael Keane, William F. B. Loughman, William L. Murphy, and Arthur Lanigan O'Keiffe.

Completed Examination.—Andrew J. Bracken, George P. A. Bracken, Alfred N. Crawford, Christopher A. Cusack, Benjamin D. Gibson, George A. D. Harvey, Patrick Kinsella, Francis J. Lennan, William J. O'Sullivan, James Parker, and Thomas J. Ryan.

FOREIGN UNIVERSITY INTELLIGENCE.—*Basle:* Dr. Gustav Wolff of Carlsruhe has been appointed Extraordinary Professor of Psychiatry.—*Berlin:* Dr. Maximilian Henkel has been recognised as *privat-docent* of Midwifery and Gynæcology, Dr. Heinrich Poll as *privat-docent* of Comparative Anatomy, and Dr. Fritz Frankenhäuser as *privat-docent* of Internal Medicine.—*Bologna:* Dr. B. Schiassi has been recognised as *privat-docent* of Surgery.—*Bonn:* Dr. Wilhelm Reis has been recognised as *privat-docent* of Ophthalmology.—*Budapest:* Dr. J. Siklossy has been recognised as *privat-docent* of Ophthalmology and Dr. Illyes as

privat-docent of Diseases of the Urinary Organs.—*Constantinople:* Dr. Vollbrecht of Darmstadt has accepted the offer of the post of Medical Organiser of the Turkish Army in succession to Dr. Rieder.—*Copenhagen:* Dr. Wichmann has been appointed *privat-docent* of Children's Diseases and Chief Medical Officer of the Queen Louisa Children's Hospital.—*Erlangen:* Dr. Menge of Leipsic has been offered the chair of Midwifery and Gynæcology in succession to Dr. Veit who goes to Halle.—*Florence:* Dr. Lorenzo Bardelli has been recognised as *privat-docent* of Ophthalmology.—*Freiburg:* At last the chair of Midwifery and Gynæcology, vacated by Dr. Hegar, has been filled by the appointment of Professor Krönig of Jena.—*Heidelberg:* Dr. Franz Nissl has been promoted to the chair of Psychiatry vacated by Dr. Bonhoeffer who goes to Breslau. Dr. Siegfried Schoenborn has been recognised as *privat-docent* of Internal Medicine.—*Kieff:* Dr. A. Shimanoffski has been promoted to the chair of Ophthalmology.—*Königsberg:* Dr. Siegfried Hammerschlag has been recognised as *privat-docent* of Midwifery and Gynæcology.—*Leipsic:* Dr. Wilms, *privat-docent* of Surgery, has been promoted to an Extraordinary Professorship.—*New York (College of Physicians and Surgeons):* Dr. Harry McM. Painter has been appointed to the chair of Midwifery.—*Turin:* Dr. Amadeo Herlitzka has been recognised as *privat-docent* of Physiology.

TORBAY HOSPITAL, TORQUAY.—The necessary funds having now been raised for the provision of a children's ward and a new operating theatre at the Torbay Hospital, Torquay, the work will be at once taken in hand.

MEDICAL PROGRESS IN RUSSIA.—A note from Rostov on the Don says that shortly a Pasteur inoculation station will be opened in the Nikolaevsk town infirmary. The *Sviet* announces that during the coming winter a pan-Russian conference will be called of town sanitary educational institutions and veterinary surgeons to consider town sanitation and hygiene.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—At a meeting of the West of England and South Wales Branch of the Incorporated Society of Medical Officers of Health held at Oxford on July 29th Mr. Ebenezer Davies was elected president of the branch. Mr. Davies was appointed medical officer of health of Swansea in 1864 and is probably the oldest medical officer of health in office in the United Kingdom.

PRESENTATION TO A MEDICAL PRACTITIONER.—Mr. A. R. Johnston, M.B., B.Ch. Dub., who has resigned his appointment as medical superintendent of the infirmary of St. Olave, Rotherhithe, in consequence of ill-health, after a connexion extending over 18 years, has been presented with a silver flower bowl and a pair of silver vases by officers and staff of the infirmary in recognition of his uniform attention and kindness on all occasions during his long tenure of office.

UNIVERSITY OF DURHAM.—A meeting of members of the University of Durham was held on July 25th in the Owens College Union Rooms for the purpose of forming a "Manchester Association of Members of the University of Durham." The formation of the association was proposed by the Rev. W. A. Parry, M.A., seconded by the Rev. G. Hilton, B.A., and unanimously carried. Dr. R. Young recorded the history of the Association of Durham Medical Graduates and proposed that the new organisation should have a similar form to that society but should include all members of the University and not medical graduates only. Dr. J. Braithwaite seconded the proposition which was carried. The Rev. Edward Hicks, M.A., D.D., D.C.L., was elected President and Dr. Young and the Rev. D. Ellison were elected Vice-Presidents. It was decided that the President should be elected annually and that a distinguished Durham graduate in medicine should preside during the second year. Mr. W. H. Bennett of Cheetham, Manchester, was appointed honorary secretary and the Rev. J. W. Nicholson, M.A., honorary treasurer. The following committee was elected: the Rev. S. J. Bastow, B.C.L., the Rev. M. M. Oldfield, M.A., the Rev. J. Downham, M.A., the Rev. W. A. Parry, M.A., the Rev. J. W. Nicholson, M.A., the Rev. George Hilton, B.A., Dr. Nathan Raw, Mr. G. Newbolt, Dr. Braithwaite, Dr. William Bennett, Dr. William Race, the Rev. F. C. Dearden, M.A., and Mr. F. A. Pickings, B.A. Further information may be had from Mr. Bennett, secretary, 309, Waterloo-road, Manchester.

LITERARY INTELLIGENCE.—Messrs. W. B. Saunders and Co. announce that the new (second) edition of Pusey and Caldwell's work on "Röntgen Rays in Therapeutics and Diagnosis" will be ready in about two weeks, the first edition being exhausted. The new edition will be increased by about 100 pages and the case histories will be brought down to date. The price of the work will remain as heretofore, 21*s.* net. The same firm will also publish in the autumn an important new work on the "Vermiform Appendix and its Diseases," by Dr. Howard A. Kelly.

IRISH MEDICAL SCHOOLS' AND GRADUATES' ASSOCIATION.—The summer general meeting of the above association was held on July 27th at the University Museum, Oxford, the President, Surgeon-General C. Sibthorpe, C.B., being in the chair. Amongst those present were Sir Charles A. Cameron, C.B. (Dublin), Lieutenant-Colonel J. P. H. Boileau, A.M.S. (Trowbridge), Dr. James Little (Dublin), Dr. Percy V. Dodd (Folkestone), Dr. William Douglas (Goudhurst), Dr. Robert Esler (London), Dr. T. Gelston Atkins (Cork), and the provincial honorary secretary, Mr. James Stewart (Clifton). The following motion, proposed by Dr. Atkins and seconded by Sir Charles Cameron, was passed unanimously:—

That a copy of the two resolutions adopted at the special general meeting of May 25th be sent to the chairmen of the various boards of guardians throughout Ireland, together with any additional statements the council may think fit to forward with a view to strengthening the case of the Irish Poor-law medical officers.

The meeting then adjourned.

EPSOM COLLEGE.—On July 22nd the prizes were distributed to the scholars of Epsom College. In consequence of a few cases of scarlet fever of a mild type having occurred during the last few weeks of term the school committee determined to omit the usual gathering of friends and parents of pupils on Founder's Day and as the outbreak took place so near the end of the term several of the boys went home beforehand. The headmaster was enabled to say at the distribution that the strict measures of isolation and disinfection observed had resulted in no fresh cases occurring for 13 days. The sanitary works and the disinfection of the College have been placed by the works committee in the hands of the local sanitary surveyor, who has at his disposal the services of the College surveyor and contractor. The latter will be carrying out the repairs and the cleansing of the College usually undertaken at the end of each term. The emptying of the building for nearly two months will, with the precautions already taken, give assurance that the College will be free from all taint connected with the recent outbreak. Amongst the honours gained direct from the school since the last Founder's Day are an open classical scholarship of £80 at Keble College, Oxford, and 11 passes at the last London matriculation examination, four boys being in the first division. The honours gained by former pupils during the same period have been numerous and varied. Dr. Alan Reeve Manby has received the honour of knighthood; Mr. H. J. Mackinder has been appointed by the senate of the University of London director of the school of economics and political science; Mr. R. C. Lucas has been appointed headmaster of Wolverley Grammar School, Kidderminster; Dr. L. P. Phillips has been appointed professor of clinical medicine in the Medical School at Cairo and physician to Kasr-el-Aini Hospital; Captain G. T. Mair has been appointed to the command of the Artillery of the Nigeria Frontier Force; Mr. L. S. Wood has been appointed a junior inspector under the Board of Education; and Mr. E. M. Corner has been appointed assistant surgeon to St. Thomas's Hospital and to the Children's Hospital, Great Ormond-street.

CLOSING OF SCHOOLS IN SCOTLAND.—The Local Government Board for Scotland has addressed circular letters to the medical officers of local authorities and to the clerks to local authorities on the subject of closing of schools on account of infectious disease. The Board offers for their guidance some suggestions as to the considerations which ought to determine resort to such a measure. The Board calls special attention to Article 30 of the Scotch Education Department Code and to the provisions of Section 57 of the Public Health (Scotland) Act, 1897. The Board considers that the closing of a school is a serious interference with the educational work of a district and is not to be recommended or required as a matter of routine or for any but substantial reasons. The medical officer of health must be

satisfied that the disease is being spread, or is likely to be spread, by the continued attendance of the children at school and that the closing of the school offers a clear prospect of preventing or checking this spread. Even then he must consider whether the closing of one or more classes or of one particular department may not be sufficient. The report of the medical officer of health to the local authority advising it to close the school, or departments of it, or to exclude certain scholars, must suggest the period of closure, name the disease, describe its extent and fatality, the measures adopted, and give reasons for suspecting propagation by the school and for anticipating benefit from its closure. A copy of this report must be sent by the medical officer of health to the Board. In the letter to the clerks to local authorities the Board states its impression that schools have been closed by certain local authorities in default of isolation in hospitals, disinfection, and other procedures which they have the power and duty to adopt to secure public safety. The clerks are advised that notices from local authorities to the managers of schools requiring them to close the schools or otherwise must be accompanied by a copy of the report of the medical officer of health and that a copy of every such notice sent to the managers of the school must be sent to the Local Government Board. The school managers have been notified by the Board that schoolmasters should give the earliest possible intimation of sickness to the medical officers of health and that schoolmasters should act promptly on receipts of any intimation from the medical officer of health regarding the existence of infectious disease. In short, every effort is to be made to obviate the interruption of education in the school.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, JULY 27TH.

Decomposed Meat and Cancer.

MR. ALFRED DAVIES asked the President of the Local Government Board whether he had now any official information showing that the stoppage of decomposition in meat during transit from abroad to the United Kingdom had any injurious effect upon those eating it; and whether the Cancer Research Committee had reported on his communication to it in March last.—MR. LONG replied: The answer to the first part of the question is in the negative. I have received a communication from the executive committee of the Imperial Cancer Research Fund and I find that it believes that the stoppage of decomposition in frozen and chilled meat during transit from abroad to the United Kingdom has no injurious effect whatever upon those eating such food. The executive committee further believes that the consumption of such food cannot be held in any degree accountable for the increase in the recorded number of cases of cancer in this country.

Central Midwives Board and Candidates for Diploma.

Dr. E. C. THOMPSON asked the Home Secretary whether he was aware that the Central Midwives Board had appointed nurses to examine candidates for the diploma in midwifery; and, if so, whether he would direct that candidates for a midwifery diploma must be examined by qualified physicians and surgeons.—MR. AKERS-DOUGLAS answered: No, Sir; I think this is not the case. I understand that the whole scheme of examination is still under the consideration of the Central Midwives Board. That Board is, however, left by statute free to exercise its discretion in the appointment of examiners and I have no power to give any directions in the matter.

Senate of the Royal University of Ireland.

MR. CHARLES CRAIG asked the Chief Secretary to the Lord Lieutenant of Ireland whether his attention had been called to a meeting of the Royal University Graduates' Association held in Belfast on July 18th at which Dr. Leslie was unanimously selected as the candidate whose claims should be brought before the Government for appointment to the vacancy on the Senate of the Royal University caused by the death of Dr. William McKeown; and whether, having regard to the fact that the Royal University Graduates' Association represented the opinions of a large proportion of the graduates of the Royal University and of the public in the North of Ireland and that the late Dr. McKeown was the representative of this opinion in the Senate, the Government would appoint Dr. Leslie to the vacant seat to preserve the continuity of representation of this opinion.—MR. WYNDHAM said: Representations have been made in favour of the appointment of Dr. Leslie to fill the vacancy on the Senate caused by the death of Dr. McKeown. These will be considered by the Government.

Infection in Dum-Dum and other Parasitic Fevers.

Sir WALTER FOSTER asked the Secretary of State for War whether any steps were being taken to investigate the mode of infection in Dum-Dum and other allied parasitic fevers in India with the view of preventing the heavy mortality and invaliding from these fevers among British soldiers in India and so diminishing the annual drafts now necessary.—MR. ARNOLD-FORSTER said: Steps are being taken to investigate the mode of infection in Dum Dum fever, but it will be some time before the investigation will be completed and further evidence must be awaited before anything in the nature of special preventive measures can be intelligently formulated. Assuming that by other allied parasitic fevers malarial fevers are referred to preventive measures have been adopted at military stations in India where such fevers are prevalent. It may be added that as regards other fevers a special commission is investigating Malta fever, the occurrence of which in India is becoming more recognised, and a special committee is investigating antityphoid inoculation.

Blending of Cheap Foreign Wines.

Mr. ALBAN GIBBS asked the Chancellor of the Exchequer whether he was aware that the diminution in the duty payments on cheap foreign wines was partly caused by the manufacture, free of duty, in this country of wine from dried currents and raisins, which manufacture was blended with the cheap classes of imported wines, and that such mixtures were almost invariably sold under the designation of some foreign wine, and, if so, whether he proposed to take any steps to protect the revenue and to safeguard the public from this species of fraud.—MR. AUSTEN CHAMBERLAIN answered: I am aware that allegations have been made in the sense of the question, but the information at present at my disposal is not sufficient to enable me to determine what measure of truth may be contained in them. I am, however, satisfied that a case for inquiry exists and I propose in the course of the autumn to institute further investigation of the subject and, if necessary, to consider whether measures are required for the protection of the revenue. As regards protection of the public from fraud, it is open to any purchaser who may be defrauded by a false trade description to take proceedings under the Merchandise Marks Acts; and for this purpose members of the trade are really in as good a position to take action as any public department, though for both the difficulties in the way of establishing proof of an offence are great.

THURSDAY, JULY 28TH.

Cheap Patent Alcohol.

Mr KILBRIDE asked the Chancellor of the Exchequer whether he would state the quantities of maize, foreign barley, and beet molasses used in distilleries in the United Kingdom during the last financial year for the manufacture of plain British spirits; whether he would consider the advisability of imposing an import duty on those commodities with a view to encourage the cultivation of cereals in the United Kingdom and also with a view to lessen the production of cheap patent alcohol which was extracted from these foreign importations and condemned by the medical profession as unfit for consumption.—MR. AUSTEN CHAMBERLAIN replied: The official records of materials used in distilleries in the United Kingdom for the manufacture of plain British spirits do not distinguish under separate heads any of the articles mentioned in the first part of the question. The suggestion contained in the latter part of the question is inconsistent with the existing financial system of the country.

Mr. KILBRIDE further asked the Chancellor of the Exchequer whether sulphuric acid was used in the manufacture of patent spirit in the United Kingdom, and if so, whether he would state the quantities used for this purpose during the last financial year.—MR. AUSTEN CHAMBERLAIN said: Sulphuric acid is used only in the inversion of molasses where that material is employed in the manufacture of patent spirit. No official account is taken or kept of the quantity used.

MONDAY, AUGUST 1ST.

Medical Officers in Remote Districts.

MR. CATHCART WASON asked the Secretary for Scotland whether, when considering the report of the departmental committee on Poor-law medical relief in Scotland, he would take into consideration the position of those medical officers situated in remote highland and island parishes who, owing to geographical difficulties, were unable to name substitutes to act for them during illness or holidays; and whether, in view of the fact that these public servants had had no holiday for a number of years owing to the high fees charged by locumtenents, he would cause arrangements to be made whereby these medical officers might have a free annual rest, such as could be enjoyed by their colleagues in other districts and all other parish officials.—MR. GRAHAM MURRAY replied: The revision of the rules for Poor-law medical relief in Scotland will be proceeded with as soon as legislative authority can be obtained and due consideration will be given to the difficulty experienced by medical officers of remote parishes in procuring substitutes; but without legislation no alteration can be made in the existing rules. The question of holidays for medical officers has received the careful and sympathetic attention of the Local Government Board, as will be seen from its sixth annual report, pages xxv.–vi., but it has at present no authority to do more than it has there indicated.

Dismissal of Parish Medical Officer.

MR. CATHCART WASON asked the Secretary for Scotland whether his attention had been drawn to the dismissal of the parish medical officer by the parish council of Durness, Sutherlandshire, and to the fact that the medical officer entered an action in the Court of Sessions with the result that he was reinstated in his office and the parish involved in legal expenses amounting to over £200; that protests were lodged with the council against the medical officer's dismissal by a majority of the ratepayers; whether he would consider the advisability of taking steps to protect medical officers in crofting counties against such treatment and to save the ratepayers from being burdened with legal expenses in similar cases in the future; and whether, seeing that this parish council disqualified two elected members of the council who were said to be friendly to the medical officer and replaced them by two others, one of whom was as similarly disqualified as the ejected members, steps would be taken to prevent the recurrence of such action.—MR. GRAHAM MURRAY said: I am informed that the Local Government Board for Scotland is aware that the medical officer of Durness was recently dismissed by his parish council and that he entered an action in the Court of Session, with the result that he was reinstated in his office and expenses adjudged against the parish council. But the medical officer is the servant of the parish council and not of the Board and legislation would be required to make him removable from office only by the Board. As regards the latter part of the question I have no reason to anticipate the recurrence of such action on the part of a parish council and am not prepared to take any steps in the matter.

Management of Horton Lunatic Asylum.

MR. WHITMORE asked the President of the Local Government Board whether his attention had been called to the case of R. S. Clarke and others, tried at last assizes at Guildford on July 19th, and to the finding of the jury that they were of opinion that the Horton Lunatic

Asylum had been grossly mismanaged and that the conduct of the persons responsible for the administration of the asylum should be at once seriously inquired into; and whether he proposed to take any action in the matter.—Mr. AKERS-DOUGLAS said: My right honourable friend has asked me to answer this question. I am informed by the Commissioners in Lunacy that the matter is receiving careful consideration and that they are awaiting the report of a subcommittee appointed by the asylums committee of the London County Council to inquire into the question.

High Death-rate amongst Infants.

Sir WALTER FOSTER asked the President of the Local Government Board whether, in view of the high death-rate amongst infants in populous centres and its connexion with improper feeding, he would direct the attention of the Poor-law authorities to the importance of supplying out-relief children, who were hand fed, with pure milk and proper feeding-bottles when the parents were unable to provide them.—Mr. LOCH replied: In the answer which I gave to the question put to me by the honourable Member on June 16th I promised to bring under the notice of the inspectors his suggestion with regard to an allowance of milk in certain cases of outdoor relief. This I have done. I will also draw their attention to the further suggestion now made by the honourable Member.

Death from Anthrax.

Mr. MACDONA asked the Secretary of State for the Home Department whether he was aware that at an inquest recently held in Liverpool upon a man who had died from anthrax it came out in the evidence that the deceased was shaved by a barber in Liverpool shortly before his death who, at deceased's request, cut open the swelling upon the deceased's face, thus causing a serious risk of anthrax being further spread, and, if so, whether he would take steps to prevent a recurrence of such action.—Mr. AKERS-DOUGLAS replied: I am informed that the facts are as stated in the first part of the question. The matter is entirely outside the scope of the Factory Act and I have no power to take any action, but I may say that I am advised that the risk of anthrax being spread in this way would be small.

TUESDAY, AUGUST 2ND.

An Irish Question.

Mr. HAYDEN asked the Chief Secretary to the Lord Lieutenant of Ireland whether he could state the total number of assistant medical officers of lunatic asylums in Ireland and of these how many were married.—Mr. WYNDHAM said: The total number of assistant medical officers in district asylums is 35. No married man can be appointed to this position. I have no information as to marriages, if any, contracted subsequently to appointment.

BOOKS, ETC., RECEIVED.

APPLETON, SIDNEY, London.

Medical Diagnosis. Special Diagnosis of Internal Medicine. A Handbook for Physicians and Students. By Dr. Wilhelm v. Leube, Professor of Medicine and Physician-in-Chief to the Julius Hospital at Würzburg. Authorised translation from the sixth German edition. Edited, with annotations, by Julius L. Salinger, M.D., late Assistant Professor of Clinical Medicine in the Jefferson Medical College, and Physician to the Philadelphia Hospital. Price 25s. net.

A Practical Treatise on Nervous Diseases. For the Medical Student and General Practitioner. By F. Savary Pearce, M.D., Professor of Nervous and Mental Diseases in the Medico-Chirurgical College of Philadelphia. Price 14s. net.

Röntgen Ray Diagnosis and Therapy. By Carl Beck, M.D., Professor of Surgery in the New York Post-Graduate Medical School and Hospital. Price 18s. net.

Surgical Emergencies. The Surgery of the Head. By Bayard Holmes, B.S., M.D., Professor of Surgery in the University of Illinois, Professor of Clinical Surgery in the American Medical Missionary College, Chicago. Price 12s. net.

BAILLIÈRE, TINDALL, AND COX, 8, Henrietta-street, Covent-garden, W.C.

Medical Monograph Series, No. 9. Adenoids. By Wyatt Wingrave, M.D., Physician and Pathologist, Central London Throat and Ear Hospital. Price 2s. 6d. net.

A Manual of Practical Medical Electricity, the Röntgen Rays, Finsen Light, Radium and its Radiations, and High-frequency Currents. By Dawson Turner, B.A., M.D., F.R.C.P. Ed., M.R.C.P. Lond. Fourth edition, revised and enlarged. University Series. Price 10s. 6d. net.

Diseases of the Stomach and their Surgical Treatment. By A. W. Mayo Robson, F.R.C.S., and B. G. A. Moynihan, M.S. Lond., F.R.C.S. Second edition. Price 15s. net.

BARTH, JOHANN AMBROSIUS, Leipzig.

Handbuch der Therapie der Chronischen Lungenschwindsucht. Mit besonderer Berücksichtigung der Tuberkulose der Oberen Luftwege. Bearbeitet von Dr. Aron, Geh. Med.-Rat. Dr. Baer, Dr. F. Blumenfeld, Prof. Dr. Bohland, Priv.-Doz. Dr. Brandenburg, Stabsarzt Dr. Cammert, Prof. Dr. Finkler, Dr. Ernst R. W. Frank, Dr. Ad. Gottstein, Prof. Dr. Hess, Dr. Hezel, Prof. Dr. Hueppe, Prof. Dr. Körner, Prof. Dr. von Kryger, Prof. Dr. Lazarus, Prof. Dr. Martius, San.-Rat. Dr. Meissen, Dr. F. Mennes, Prof. Dr. Moeller, Prof. Dr. Joh. Müller, Dr. Nahm, Dr. Nägelsbach, Prof. Dr. Nebelthau, Prof. Dr. Nolen, Dr. Aug. Predöhl, Dr. Rumpf, Prof. Dr. Saugmann, Dr. G. Schröder, Prof. Dr. Seifert, Prosektor Dr. Ph. N. Tendeloo, San.-Rat. Dr. Thilenius, Dr. Thom, Dr. Fr. Wehmer, Dr. P. Wehmer, Priv.-Doz. Ritter, Dr. von Weismayr, Priv.-Doz. Dr. Winternitz und Prof. Dr. Witzel, Herausgegeben von Dr. G. Schröder, Dirigierendem Arzt der Neuen Heilanstalt für Lungenkranke zu Schömberg O. A. Neuenbürg und Dr. F. Blumenfeld, Arzt für Nasen-, Hals- und Lungenkranke in Wiesbaden. Price M.25.

CASSELL AND COMPANY, LIMITED, London, Paris, New York, and Melbourne.

Serums, Vaccines and Toxines in Treatment and Diagnosis. By William Cecil Bosanquet, M.A., M.D Oxon., F.R.C.P. Lond., Physician to Out-patients, Victoria Hospital for Children; Assistant Physician (late pathologist) to Charing Cross Hospital. Price 7s. 6d.

CHURCHILL, J. & A., 7, Great Marlborough-street, W.

Clinical Lectures on Mental Diseases. By T. S. Clouston, M.D. Edin., F.R.C.P.E., President of the Royal College of Physicians of Edinburgh, Physician-Superintendent of the Royal Edinburgh Asylum for the Insane. Sixth edition. Price 14s. net.

DEUTICKE, FRANZ, Leipzig und Wien.

Die nervösen Komplikationen und Nachkrankheiten des Keuchhustens. Klinische und anatomische Studien. Von Dr. Rudolf Neurath. Price M.3.00.

FROWDE, HENRY, Amen Corner, London, E.C.

Dirr's Colloquial Egyptian Arabic Grammar. For the use of Tourists. Translated by W. H. Lyall, M.A., Brasenose College, Oxford. With Vocabulary. Price 4s. net.

GREEN, WILLIAM, AND SONS, Edinburgh and London.

Arhythmia of the Heart. A Physiological and Clinical Study. By Dr. K. F. Wenckebach, Professor of Medicine, Groningen. Translated by Thomas Snowball, M.A., M.B., Burnley. Price not stated.

JACK, T. C. and E. C., 34, Henrietta-street, W.C., and Edinburgh.

The "Domestic Arts" Series, by Florence B. Jack, late Principal, School of Domestic Arts, Edinburgh. Entrees of Meat, Game, and Poultry with Sauces. Price 1s. net. Cold Sweets, Jellies, and Cream. Price 1s. net.

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International Clinics. Edited by A. O. J. Kelly, A.M., M.D., Philadelphia, U.S.A., with collaboration. Vol. II. Fourteenth Series, 1904. Price not stated.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BELL, E. S., M.R.C.S., L.R.C.P. Lond., has been appointed Medical Superintendent of St. Olave's Union Infirmary, Rotherhithe.

BLACKALL, J. J., M.D., M.S. Q.U.I., has been appointed Certifying Surgeon under the Factory Act for the Killadysert District of the county of Clare.

BURTON, H., L.R.C.P.I., L.R.C.S. Eng., has been appointed Certifying Surgeon under the Factory Act for the Marple District of the county of Chester.

DWAN, J. H., L.R.C.P.I., L.R.C.S.I., has been appointed Certifying Surgeon under the Factory Act for the Rathgormuck District of the county of Waterford.

EAMES, E. S. B., M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory Act for the Ufficulme District of the county of Devon.

FLOYD, S. G., M.D. Lond., has been appointed Certifying Surgeon under the Factory Act for the Grays District of the county of Essex.

FORBES, JAMES GRAHAM, M.D., D.P.H. Cantab., M.R.C.P. Lond., has been appointed an Assistant Physician to the Metropolitan Hospital, Kingsland-road.

GRAHAM, R. B., L.R.C.P., F.R.C.S. Edin., has been appointed Certifying Surgeon under the Factory Act for the Leven District of the county of Fife.

HANDLEY, W. SAMPSON, M.S. Lond., F.R.C.S., has been appointed a Hunterian Professor of Pathology in the Royal College of Surgeons of England.

LACKIE, J. LAMOND, M.D., F.R.C.P. E., has been appointed Assistant Physician to the Royal Maternity and Simpson Memorial Hospital, Edinburgh, and Examiner in Obstetrics, University of St. Andrews.

LEICESTER, M. E., M.D. Brux., L.R.C.P., L.R.C.S. Edin., L.S.A., has been appointed Medical Officer for the No. 3 District of the Liskeard (Cornwall) Union.

MACDONALD, D. J., M.B., M.S. Aberd., has been appointed Certifying Surgeon under the Factory Act for the Stornoway District of the county of Ross and Cromarty.

MCENIRY, D., L.R.C.S., L.R.C.P. Edin., has been appointed Certifying Surgeon under the Factory Act for the Ballymacarbery District of the county of Waterford.

MAGRATH, H. G., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Certifying Surgeon under the Factory Act for the Cranborne District of the county of Dorset.

MCSWINEY, M., M.B., M.A.O. R.U.I., has been appointed Certifying Surgeon under the Factory Act for the Johnstown District of the county of Cork.

QUIRKE, J., L.R.C.P.I., L.R.C.S.I., has been appointed Certifying Surgeon under the Factory Act for the Piltown District of the county of Kilkenny.

SPON, HARRY JAMES, M.R.C.S. Eng., L.R.C.P., D.P.H. Camb., has been appointed Surgeon to the Surrey Dispensary.

TARBET, P. R., has been appointed Certifying Surgeon under the Factory Act for the Stevenage District of the county of Hertford.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BRIDGE OF WEIR CONSUMPTION SANATORIA.—Assistant Physician.
BRIGHTON THROAT AND EAR HOSPITAL, Church-street, Queen's-road.—Non-Resident House Surgeon for six months, renewable. Salary at rate of £75 per annum.
BRISTOL ROYAL INFIRMARY.—Resident Junior House Surgeon and Anæsthetist. Also Resident Casualty Officer. Salaries at rate of £50 per annum, with, board, lodging, and washing.
COLCHESTER, ESSEX AND COLCHESTER HOSPITAL.—Honorary Surgeon.
COVENTRY AND WARWICKSHIRE HOSPITAL.—Assistant House Surgeon. Salary £60 per annum, with rooms, board, washing, and attendance.
DEVON COUNTY ASYLUM.—Assistant Medical Officer. Salary £125, rising to £155, with board and lodgings.
DEVONPORT ROYAL ALBERT HOSPITAL.—Assistant House Surgeon for six months. Salary at rate of £50 per annum, with board, lodging, and washing.
DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—House Surgeon. Salary £80 per annum, with board and washing.
GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—Assistant House Surgeon. Salary £50, with board, residence, and laundry.
HEREFORD COUNTY AND CITY ASYLUM.—Senior Assistant Medical Officer, unmarried. Salary £150 per annum, with board, lodging, and laundry.
HULME DISPENSARY, Dale-street, Stretford-road, Manchester.—House Surgeon. Salary £150 per annum, with apartments, attendance, coal, and gas.
INGHAM INFIRMARY AND SOUTH SHIELDS AND WESTOE DISPENSARY.—Junior House Surgeon. Salary £75 per annum, with residence, board, and washing.
KENT COUNTY LUNATIC ASYLUM, Barming Heath, near Maidstone.—Chief Medical Officer and Superintendent. Salary £800, with unfurnished house, &c.
LANCASTER ROYAL INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with residence, board, attendance, and washing.
MAIDSTONE, WEST KENT GENERAL HOSPITAL.—Honorary Physician.
MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Hampstead and Northwood.—Resident Medical Officer for the Country Branch Hospital at Northwood, Middlesex. Honorarium £80, with board and residence. Also Honorary Dental Surgeon.
NORTH CAMBRIDGESHIRE HOSPITAL, Wisbech.—Resident Medical Officer, unmarried. Salary £100 per annum, with furnished rooms, attendance, coals, gas, and washing.
PAPA WESTRAY, Orkney.—Lady Medical Officer and Public Vaccinator. Salary £75, with fees, house, and garden.
RAINHILL (NEAR LIVERPOOL) COUNTY ASYLUM.—Assistant Medical Officer, unmarried. Salary £150 per annum, with apartments, board, attendance, and washing.
ROYAL ALBERT HOSPITAL AND EYE INFIRMARY, Devonport.—Assistant House Surgeon. Salary at rate of £50 a year.
SALFORD ROYAL HOSPITAL.—Honorary Physician.
SOUTH SHIELDS UNION WORKHOUSE.—Assistant (Resident) Medical Officer, unmarried. Salary £200 per annum, with board, residence, washing, and attendance.
WEST BROMWICH DISTRICT HOSPITAL.—Resident Junior House Surgeon. Salary £50 per annum, with board, lodging, washing, and attendance.
WEST HAM HOSPITAL, Stratford, E.—Junior House Surgeon for six months. Salary at rate of £75 per annum, with board, residence, &c.
WEST RIDING ASYLUM, Wakefield.—Locum Tenens for two or three months. Salary £3 3*s.* per week, with residence, board, &c.

Births, Marriages, and Deaths.

BIRTHS.

FINLAY.—On July 28th, at Clarendon-road, Eccles, Lancs., the wife of G. L. K. Finlay, B.A., M.B., C.M., of a daughter.
ROBERTS.—On July 28th, at Sion Hill, Garstang, the wife of Henry Roberts, M.D. Brux., M.R.C.S. Eng., L.R.C.P. Lond., of a girl.
WADDELOW.—On July 28th, at The Chantry, Whittlesey, the wife of John J. Waddelow, F.R.C.S. Eng., of a daughter.

MARRIAGES.

HARTLEY—PERRIN.—On July 6th, at St. Mary's, Harrow-on-the-Hill, by the Rev. F. Wayland Joyce, M.A., assisted by the Rev. P. J. Dale, M.A., John Dawson Hartley, F.R.C.S. Eng., elder son of Stephen Hartley, to Margaret Young, second daughter of William Perrin, of Sudbury Court, Harrow.
SMITH—RIGBY.—On July 28th, at Immanuel Church, Streatham Common, by the Rev. H. F. S. Adams, vicar, Lewis Albert Smith, M.D., son of the late Joseph Alfred Smith of Chelmsford, to Ethel Gwendolen, only daughter of John Rigby, M.A., of Streatham.
TAYLOR—FARMER.—On July 28th, at the Church of St. Bartholomew the Great, West Smithfield, Gerard C. Taylor, M.D. Cantab., of Finchley, to Isabelle M. Farmer, second daughter of Alex. Farmer, of Cupar.

DEATH.

BANNISTER.—On July 25th, at Newnham House, Havant, William Bannister, M.R.C.S. Eng., L.S.A. Lond., for many years Surgeon and Agent to the Admiralty, and M.O.H. to the Urban District Council of Havant, in his 85rd year.

*N.B.—A fee of 5*s*. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

Notes, Short Comments, and Answers to Correspondents.

OVERCROWDING IN TRAINS.

A MEETING was held on July 28th at De Keyser's Royal Hotel, London, "to protest against the overcrowding of suburban trains and the dangerous neglect of the railway companies to provide proper accommodation and convenience for passengers." The Hon. Claude Hay, M.P. for the Hoxton Division of Shoreditch, presided and explained that it was proposed to form an association to protect the interests of travellers. He disclaimed any desire to attack the interests of railway shareholders and believed increased facilities granted by the railway companies would result in larger dividends. The law on the subject was chaotic and required amendment. There might be legislative action in the next session of Parliament and therefore an organisation to focus public opinion on the matter was necessary. The Board of Trade officials had declared that it was the duty of the railway companies to enforce the by-laws against overcrowding. Captain Norton, M.P. for West Newington, said that the railway companies had a monopoly and had failed to fulfil their obligations. Resolutions were passed that immediate steps should be taken to secure the provision of those "reasonable facilities" that the law required, that the railway companies and other public carriers of passengers should be required to provide more adequately for the wants of travellers, and that a travellers' association should be formed with these objects in view and to protect the interests of travellers of every kind.

WANTED—A HOME.

M.B. (2) asks if any reader of THE LANCET can inform him of an institution into which a young man who is incapacitated by chronic asthma could be received upon payment of 12*s*. or 15*s*. a week.

A QUESTION OF ETHICS.

To the Editors of THE LANCET.

SIRS,—What is the generally accepted view on the ethics of the publication in popular lay periodicals by medical men of articles on medical and semi-medical subjects? Recently there appeared in two widely circulated monthly periodicals articles written, the one by the senior physician to a leading London hospital, another by a less well-known medical man. The former of these is worthy of a place in a medical journal. The latter is too "popular" in style. In their present situation they seem to earn the added letters "Advt."

I am, Sirs, yours faithfully,

August 2nd, 1904. M.B.

*** We do not recognise the articles in question by our correspondent's description but it is difficult to lay down rules in such matters.—ED. L.

MUSSULMAN LONGEVITY—142 YEARS OF AGE.

THE *Kasbek Telegraph* reports the death at Samarkand of the Mullah Mohamed-Labir-Kasy-Domullah-Rassikoff, better known as Mullah Alyamiena. He was a Mussulman Methuselah, being at his death 142 years of age, at least so the press has announced.

M.B. (1) is thanked for her letter. That the abuses which she details occur is undoubted, but the public health of the country is not entirely without supervision and tons of such unwholesome food are seized and confiscated yearly.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Aug. 4th, 1904.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radia in Vacuo.	Maximum Temp. Shade.	Min. Temp	Wet Bulb.	Dry Bulb.	Remarks at 8.30 A.M.
July 29	30·10	S.W.	...	107	74	60	60	66	Cloudy
,, 30	30·02	S.	0·19	124	80	65	64	67	Cloudy
,, 31	29·96	W.	...	127	76	63	62	64	Cloudy
Aug. 1	30·14	S.W.	...	126	79	59	62	65	Cloudy
,, 2	30·15	S.W.	...	122	81	61	62	67	Hazy
,, 3	30·19	S.	...	132	88	64	64	72	Fine
,, 4	30·03	S.E.	...	131	89	67	67	76	Fine

During the week marked copies of the following newspapers have been received:—*The News, Liverpool Daily Post, Scotsman, Aberdeen Free Press (Weekly), Westminster Gazette, Hertfordshire Mercury, Literary Digest (New York), Windsor and Eton Express, Standard, Cardiff News, South Wales Daily News, Surrey Advertiser, Coventry Herald, Birmingham Daily Mail, Mining Journal, Local Government Chronicle, Ipswich Times, Leeds and Yorkshire Mercury, &c.*

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (8th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.).

TUESDAY (9th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Royal Ear (3 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.).

WEDNESDAY (10th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.) Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.20 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

THURSDAY (11th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

FRIDAY (12th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.).

SATURDAY (13th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (8th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—3 P.M. Mr. Paget: Demonstration in Surgical Wards.

TUESDAY (9th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Moullin: Cancer of the Uterus.

WEDNESDAY (10th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—4.15 P.M. Dr. Russell: Demonstration in Medical Wards.

THURSDAY (11th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Davis: Diagnosis in Cardiac Murmurs.

FRIDAY (12th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Mr. Armour: Abscess of the Brain.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index to Vol. I. of 1904, which was completed with the issue of June 25th, and the Title-page to the Volume, were given in THE LANCET of July 2nd.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1904 are now ready. Bound in cloth, gilt lettered, price 18*s*., carriage extra.

Cases for binding the half year's numbers are also ready. Cloth, gilt lettered, price 2*s*., by post 2*s*. 3*d*.

To be obtained on application to the Manager, accompanied by remittance.

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WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

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SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE. It has come to the knowledge of the Manager that in some cases higher rates are being charged, on the plea that the heavy weight of THE LANCET necessitates additional postage above the ordinary rate allowed for in the terms of subscriptions. Any demand for increased rates, on this or on any other ground, should be resisted. The Proprietors of THE LANCET have for many years paid, and continue to pay, the whole of the heavy cost of postage on overweight foreign issues; and Agents are authorised to collect, and do so collect, from the Proprietors the cost of such extra postage.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied. Address—THE MANAGER, THE LANCET OFFICES, 423, STRAND, LONDON, ENGLAND.

Communications, Letters, &c., have been received from—

A.—Mr. T. Webster Atkins, Lond.; General Apothecaries' Co., Lond., Secretary of; A. J. D.; An Anxious One; A. J. L.; Mr. R. J. Albery, Lond.

B.—Dr. F. E. Bissell, Delamere; Messrs. Brady and Martin, Newcastle-on-Tyne; Mr. F. J. Burge, Shanghai; Mr. T. Bell, Lancaster; Mr. J. Bell, Hong-Kong; Dr. G. C. Belcher, Birmingham; Messrs. John Barker and Co., Lond.; Mr. C. L. Bedford, Lond.; Bibliothèque de l'Université de Bordeaux, Secretary of.

C.—Mr. J. R. Corner, Derby; Mr. G. M. Cabrera, Lond.; Cheadle Royal, Cheadle, Secretary of; Cortland Wagon Co., Lond.; Coventry and Warwickshire Hospital, Secretary of; Crystal Palace, General Manager of the; C. H. H., County Asylum, Rainhill, Clerk of; Mr. J. Cunningham, Lond.; Messrs. W. and R. Chambers, Edinburgh; Messrs. A. H. Cox and Co., Brighton; Canadian Medical Association; Dr. J. H. Crocker, Richmond.

D.—Dumfries and Galloway Royal Infirmary, Secretary of; Messrs. H. Dawson and Co., Lond.

E.—Essex and Colchester Hospital, Secretary of; Electrical Standardising, &c., Institution, Lond.

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N.—Dr. A. G. Newell, Calcutta; Messrs. F. Newbery and Sons, Lond.; Mr. H. Neeles, Lond.; Mr. J. C. Needes, Lond.

O.—Ospedale Oftalmico di Torino; Oxoniensis.

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U.—University of Edinburgh, Dean of the Faculty of Medicine of the; University College, Sheffield, Registrar of; University of London, Secretary to the Senate of the.

V.—Dr. Achille Viterbi, Turin.

W.—Mrs. Welch, Whitstable; Mr. S. Wand, Leicester; West Kent General Hospital, Maidstone, Secretary of; Wills, Ltd., Lond.; West London Hospital Post-Graduate College, Dean of; Messrs. F. Williams and Co., Lond.; West Ham Hospital, Secretary of; Messrs. H. Wilson and Son, Lond.; Mr. A. v. Wagner, Chemnitz.

X.—X. Y. Z.

Y.—Dr. A. M. Fernandez Ybarra, New York.

Letters, each with enclosure, are also acknowledged from—

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